

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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EDITORIAL COMMENT.



THE initial stages of the competitions for two-seater light 'planes at Lympne provided numerous surprises. In the first place, the eliminating trials, which everybody had regarded as child's play, proved far more difficult to pass than had been expected, and in fact only a relatively small proportion of the entrants succeeded in passing the tests during the two days set aside for the purpose, Saturday and Sunday, September 27 and 28. Secondly, the troubles encountered after the start of the actual competitions were much more numerous and a great deal more serious than anticipated. The result has been that out of the 19 machines entered but eight were admitted to the competitions when these started on Monday morning. Even this relatively small number had, by Tuesday evening, been reduced to six by the almost simultaneous failure of the engines of the two Parnall "Pixie IIIa" biplanes. At the time of going to press with this week's issue of FLIGHT there remained in the competitions only the following machines: No. 1, the Bristol "Brownie"; No. 3, the Cranwell biplane; No. 4, the Beardmore "Wee Bee"; No. 5, the Westland "Wood Pigeon" biplane; and Nos. 14 and 15, the Sopwith-Hawker "Cygnet I" and "Cygnet II."

The question will naturally be asked: What was the cause of all these failures? Summed-up in a few words perhaps the answer to that question may be said to be that the capabilities of the 1,100 c.c. engines had been over-estimated by those responsible for drawing up the rules. Yet this explanation is not, we fear, entirely true. Last year's competitions for single-seater light 'planes demonstrated that a very good performance could be obtained with an engine of 750 c.c. only, even with engines not specially designed for the purpose. When the cubic capacity for this year's competitions was limited to 1,100 c.c. it was not, perhaps, realised that the weight of the two-seater machines would be such as to make the extra engine allowance insufficient. Furthermore, at the time no engine of 1,100 c.c. was in existence which

DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:—

1924

Sept. 27—

Oct. 8 Wireless Exhibition at Albert Hall, Kensington.

" 29—

Oct. 4 2-Seater Light 'Plane Competition at Lympne.

Oct. 2 Aero Golfing Society. Autumn Meeting, at Moor Park Golf Club, for A.G.S. Challenge Cup presented by Cellon (Richmond) Ltd.

" 2 Lieut.-Col. H. T. Tizard, A.F.C., F.R.Ae.S. (of the Department of Scientific and Industrial Research), Chairman: Inaugural Lecture.

" 4 Grosvenor Challenge Cup Race at Lympne.

" Schneider Cup Race, Baltimore.

" 16 Dr. A. Rohrbach (of the Rohrbach Metall-Flugzeugbau Co.) "Large All-Metal Sea-planes," before R.Ae.S.

" 30 Major J. S. Buchanan, A.F.R.Ae.S. (of the Technical Department, Air Ministry): "The R.Ae.C. Light Aeroplane Competitions," before R.Ae.S.

Dec. 5-21 Paris Aero Show.

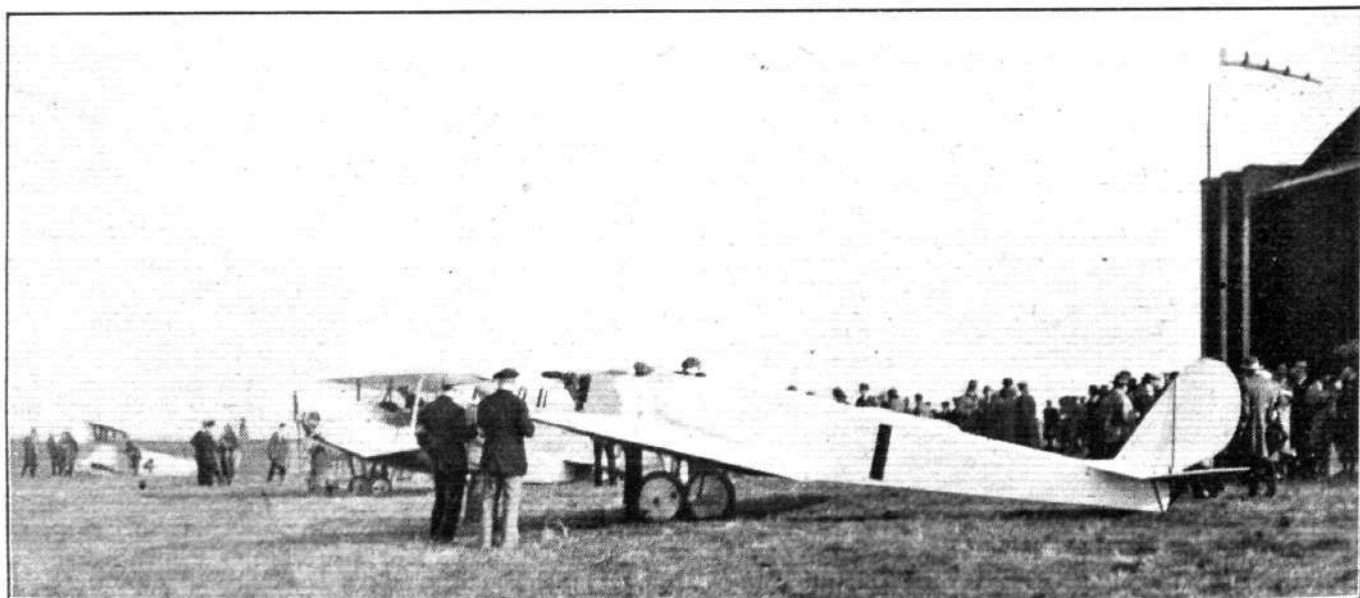
was suitable for the purpose, with the result that all the engines had to be designed, tested and developed during the few months preceding this year's competitions. Now it is a well-known fact that it takes very much longer to develop an aero engine, any aero engine, than it does to develop a new type of aeroplane. Consequently it is scarcely to be wondered at if some of the engines (one might even say most of the engines) have failed to stand up to the strain of the competitions.

On the other hand, although the engines at Lympe have come in for very heated criticism, much of it deserved, it must, we think, be admitted in fairness to the engine people that the fault does not in every case lie with the engines. There can be small doubt that several of the machines at Lympe were very considerably over weight, and that the figures published in last week's issue of *FLIGHT* (which were, incidentally, in all cases supplied by the manufacturers of the machines) were in some instances somewhat on the optimistic side, being presumably estimated rather than actual figures. Now it will be realised that if one of these small machines weighs in the neighbourhood of 1,000 lbs., and we believe there are instances to be found at Lympe of machines weighing not very far short of this figure, this will mean an engine loading of approximately 31 lbs./h.p. In itself this figure is not prohibitive, provided the wing loading is very low, but, and this is the point, unless a two-seater machine is to be very large and cumbersome, it is not easy to provide a very light wing loading. It is, of course, possible to build an aeroplane with a reasonably good performance either with high wing loading or with high power loading, but unless the aerodynamic qualities are extraordinarily good it is no easy matter to build a machine which will have a good performance with high wing loading *as well as* high power loading. To us it seems that, partly, at any rate, it is this fact which may have been to some extent responsible for at least some of the engine failures. We willingly admit that there have been very many cases where the engine manufacturers did not have this excuse, and that

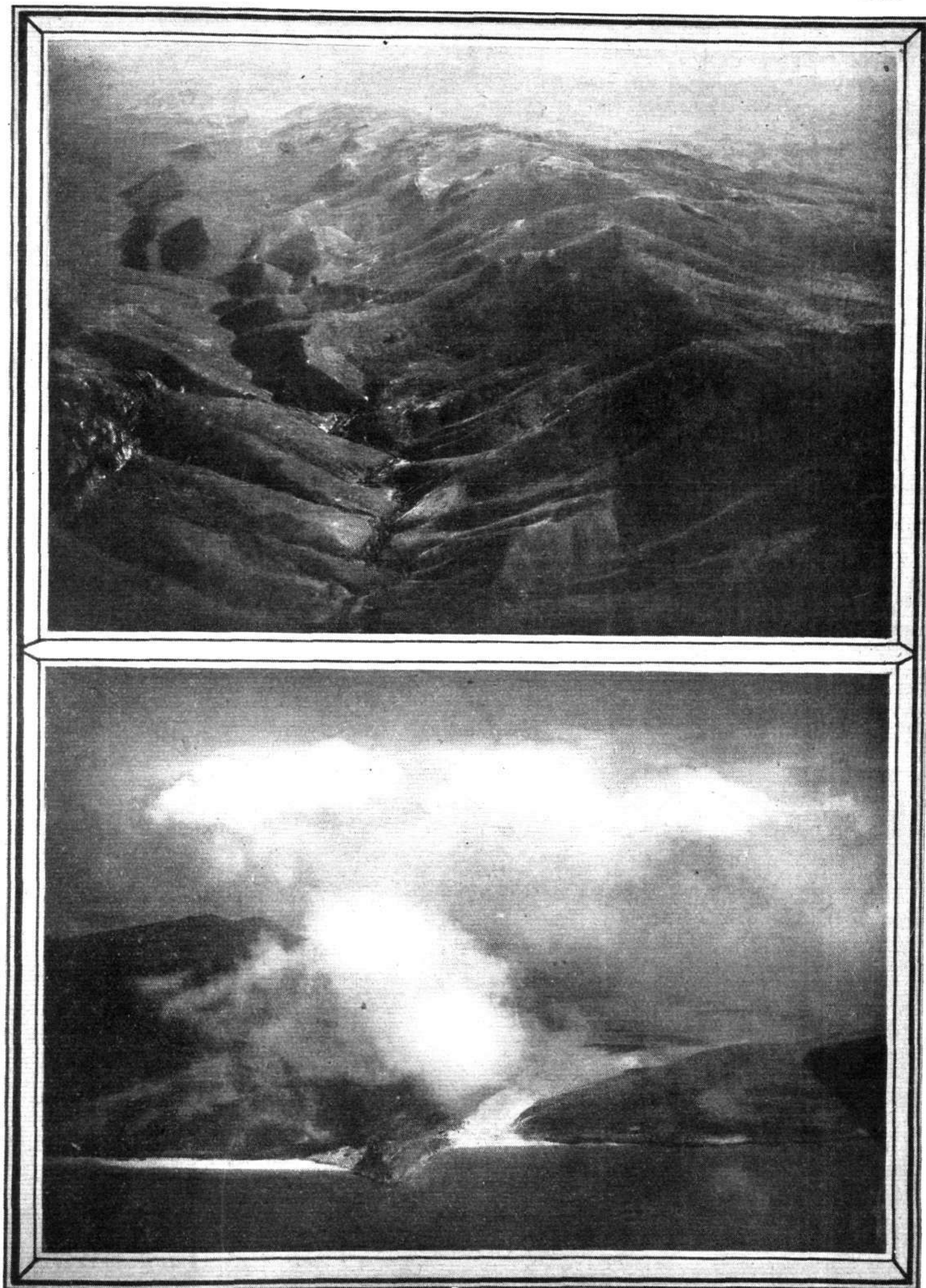
there were to be seen engines which had kept breaking their supports time after time before ever any attempt was made to fly the machines. In such cases obviously the reason cannot have been overloading. Other causes of machines failing to get through their eliminating tests were due to the impossibility of starting their engines, and here again the plea of overloading cannot be advanced. The fact remains, however, that if the Royal Aero Club had agreed to extend the time limit, which the club refused to do, and in our opinion rightly so, many competitors would have been very little better off, since there are, at the time of writing, several competitors who have not yet managed to get their engines to run properly, and an extension of one, or even two, days would thus have made no difference.

It is extremely regrettable that out of so many entries but such a small proportion should still remain in the running, and it should be made quite clear that there is not a single machine at Lympe which is not a thoroughly good aeroplane. They would all fly, and fly very well indeed, if fitted with engines of a power adequate to their weight. That some of them would fly very well even with their present engines, if these could be persuaded to run for any length of time, must also be admitted. The fact remains that many of them do not.

It might be thought that this is conclusive proof of the total inadequacy of 1,100 c.c. for two-seaters. While we believe that for practical work after the competitions the capacity should and will be increased, we do not think that 1,100 c.c. is hopelessly out of the question, and we believe that 1,500 c.c. would prove sufficient with efficient design. At least one of the machines competing at Lympe is startling proof of the possibility by efficient aerodynamic design, of flying strongly with an 1,100 c.c. engine and the equivalent weight of two occupants. At least one other constructor has demonstrated that it is possible to build down to a low weight which avoids overloading the engine, and at the same time to obtain through a reasonable power loading and generally "clean" design a very good performance.



THE LIGHT 'PLANE COMPETITION, LYMPNE: The crowd is interested in the tuning-up of some of the machines.



FLYING ACROSS SPAIN: The top picture is an aerial view of typical Spanish country, over which Alan Cobham had to fly during his recent London-Tangier-London flight. Below is another aerial view showing cloud banks hanging over the coast of Spain. It was this flimsy barrier that prevented Cobham from taking the direct route over the centre of Spain on his return trip, and forced him to follow the east coast route.

TWO-SEATER LIGHT PLANE COMPETITIONS AT LYMPNE



Lympne, Monday

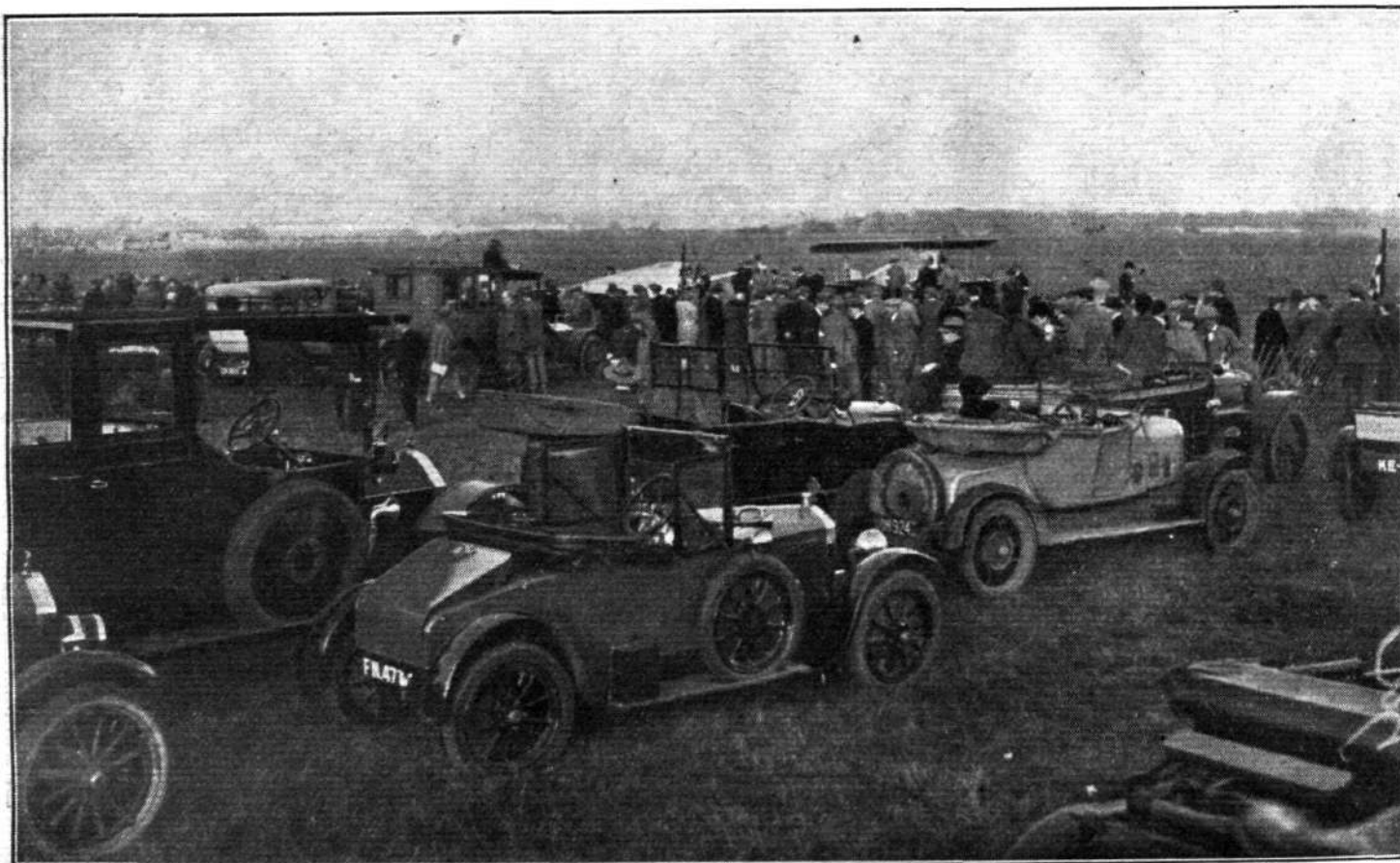
THE eliminating trials in the two-seater light plane competitions have proved somewhat of a surprise. Contrary to expectations, quite a number of the machines entered have failed to pass these tests, and in consequence the number of competitors who will be taking part in the tests themselves has been reduced from the original number of 18 to a bare 8. Certainly nobody expected these apparently simple trials to prove a stumbling-block to more than a very few, and the fact that so many machines failed came as a very great disappointment. In fact it may truly be said to have caused consternation. It seems fairly clear that nobody, not even the competitors themselves, had anticipated any difficulty in passing the simple eliminating trials, and everybody turned up on Saturday morning expecting to do the folding tests and the two laps of the course which would entitle them to commence this morning on the really serious part of the competitions.

The transport tests, and the demonstration of folding and re-erecting the machines caused no difficulty, but when it came to doing the flying tests it proved quite a different matter. To begin with, engines had in very many cases been delivered late, and there had been but little opportunity of testing them out thoroughly in the machines. In other cases engines which had hitherto behaved very well suddenly took it into their heads to refuse to start, and generally proved as temperamental as any thoroughbred. The result was that on Saturday but one machine passed its flying tests, which consisted in flying two circuits of the

triangular course of 12½ miles, the pilot occupying the front and rear seat alternately. This machine was No. 4, the Beardmore "Wee Bee I," piloted by Piercey.

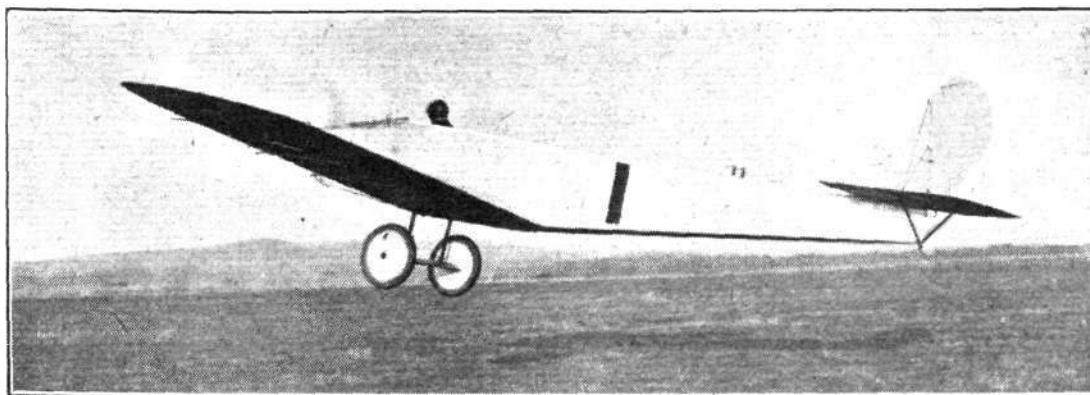
The Westland "Widgeon" came to grief during the day and was badly damaged. Fortunately the pilot escaped with a shaking. There was a very strong and gusty wind blowing at the time, and when the Westland monoplane was close to the hillside, near the Postling turning point, it got into a down-current which, apparently, was a little stronger than the climbing rate of the machine. In spite of frantic attempts to make the machine climb, it lost height in the down-current, and in attempting to turn close to the ground a wing tip caught, and the machine did the usual "cart-wheel" and smashed itself up very decisively. It was feared for a time that the pilot was seriously injured, and there was great relief when news came through that he was safe.

Bad weather and sulky engines were the main causes of the failure of all but the one competitor to get through the eliminating tests on Saturday. On Sunday the weather was a good deal better, with sunshine and generally fair weather, although there was still a considerable amount of wind. As this was the last day for passing the eliminating tests, all the remaining competitors were busy getting their engines in trim, and putting finishing touches to the machines. Fate had, however, decreed that but a relatively few should get through, and at the end of the day only the following had passed and were admitted to the main competitions: No. 1, the Bristol "Brownie"; No. 3, the Cranwell "C.L.A.2"; No. 5, the Westland "Wood Pigeon"; Nos. 14 and 15, the



THE LYMPNE LIGHT PLANE TRIALS: General view of the aerodrome from the enclosure

The Light 'Plane Competition, Lympe: The Bristol "Brownie" monoplane, No. 1, gets away. It is fitted with a Bristol "Cherub" engine.



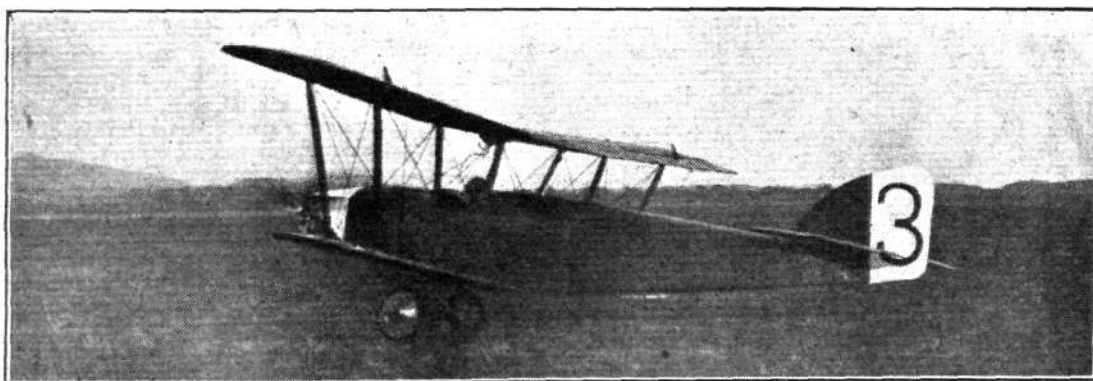
"Scorpion" in the running. The machines fitted with "Cherubs" are the Bristol monoplane, the Cranwell biplane, the Beardmore monoplane, the Westland biplane and the Parnall biplane. The one British Anzani left is fitted in the Hawker "Cygnets" (flown by Longton), and the Blackburne is fitted in the second Parnall biplane. The A.B.C. is mounted in the second Hawker biplane. Of the machines which passed the eliminating tests all behaved very well and gave very little trouble.

With reference to the eliminated ones the briefest mention will show the reasons, or at any rate the apparent reasons, for the various failures. No. 2, one of the Bristol "Brownies," which had been doing a great deal of flying at Filton without giving any trouble at all, suddenly developed wing flutter, and the pilot had to make a hurried landing. The exact cause of the trouble is not yet definitely located, but it seems likely to have been a result in the first instance of the peculiar aileron control employed, in which the "positive" aileron cables are held down by rubber cords, the balancing cables being positively operated. As the machine was flying along, the wing suddenly commenced to warp, first one way and then the other, and there were a few very anxious moments until the warping was seen to die down and the pilot made a safe landing. Shortly afterwards one of the wings was partly stripped, and it was found that not a single wing structure part had failed; not even the varnish was cracked. There can thus be no question of structural failure, and it would appear to be one of those cases of wing flutter which are occasionally met with, particularly in thick wings. It may be recalled that in his lecture before the Institution of Aeronautical Engineers Mijneer Fokker referred to this question, and stated that in his particular case the trouble had been overcome by loading the ailerons.

The Bristol "Brownie" monoplane, No. 2, heads for the starting line at Lympe.

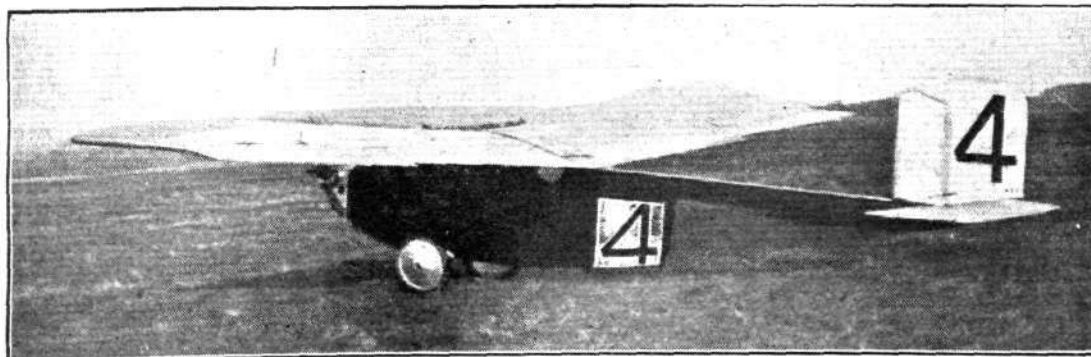
Sopwith-Hawker "Cygnets"; Nos. 18 and 19, the Parnall "Pixie IIIa"s.

As far as engines are concerned, this left 5 Bristol "Cherubs," 1 Blackburne, 1 British Anzani, and 1 A.B.C.

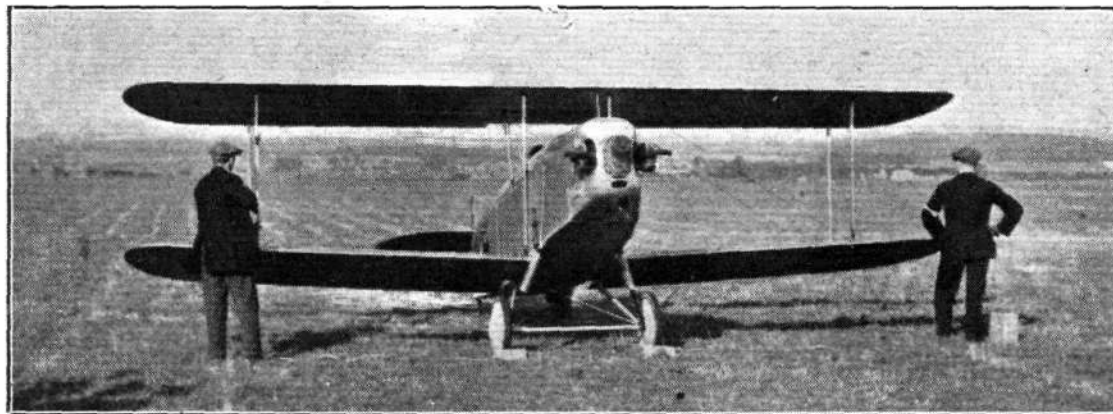


The Light 'Plane Competition, Lympe: The "Cranwell" biplane (Bristol "Cherub"), built by the Cranwell Light Plane Club, starting for a test flight.

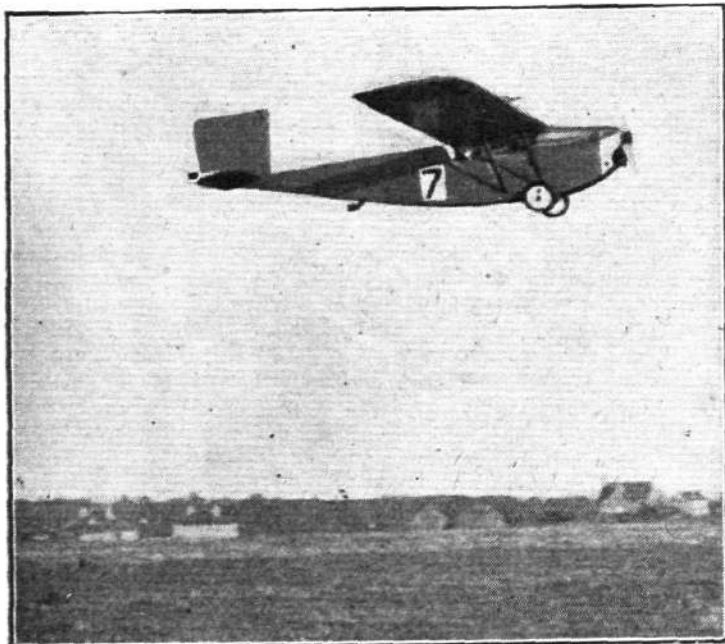
The Beardmore "Wee Bee" monoplane (Bristol "Cherub") taking off in the eliminating trials at Lympe.



Running-up the engine of No. 5, the Westland "Wood Pigeon."



No. 7, the A.N.E.C. monoplane, failed to get off the ground with its full load, although it got off easily with part load and appeared to climb well. The reason is not quite clear, and does not quite seem to be accounted for by the extra power loading caused by the weight equivalent to the second occupant. The Anzani appeared to be running reasonably well, but in one attempt to get off a valve broke, and when this had been replaced the machine flew well without a passenger. After that the engine could not be got to fire at all. It



AT LYMPNE: The A.N.E.C. II monoplane well away on a test flight.

seems possible that if the undercarriage had been a little higher so as to give a slightly larger angle on the ground, the machine might have been got off, and when once in the air it would probably fly very well. At any rate, what with trying to get off and trying to get the engine to start, the day passed, and when the official closing hour of six came the machine had not gone through its tests.

A somewhat similar fate befell No. 8, the Short monoplane. This machine flies very well with pilot only on board, but when carrying full load appears to be too heavy for its engine. The machine is a very pretty piece of work, and its failure to get through the eliminating tests was a great disappointment.

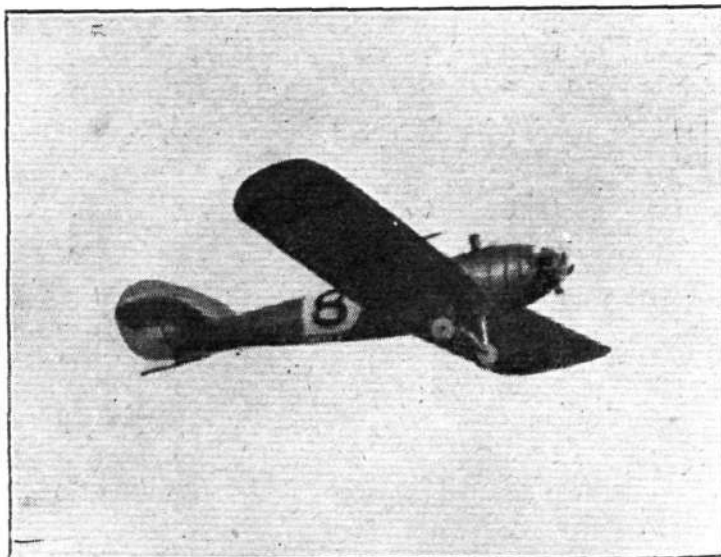
In the case of No. 9, the Supermarine "Sparrow," the trouble was not overloading, nor any fault that could possibly be ascribed to the machine. Capt. Biard had made one lap of the circuit and the prescribed figure-of-eight, and had changed into the other cockpit. He just missed getting through his tests with flying colours by a connecting rod smashing through the crank-case. In spite of frantic efforts on the part of the Supermarine crew it was not found possible to get a new engine fitted in time for Biard to make a second attempt. Commander Bird worked like a Trojan, got his coat off and his shirt sleeves up, and was at one time practically unrecognisable on account of the oil with which he was smothered. In spite of heroic efforts, however, the second Blackburne could not be got to run properly in time for the two laps of the course to be completed before 6 p.m. The

Supermarine flew so well when its engine would let it that the failure caused very keen disappointment to all.

The Avro "Avis" proved another disappointment. The geared Bristol "Cherub" was not received until a short time before the competitions, and there had been no time to find out the various small "snags" in connection with mounting, etc. After working hard during Saturday and Sunday morning, the machine was got ready for flight on Sunday afternoon, but the engine could not be coaxed into giving its "revs." Bert Hinkler made numerous attempts to get the machine off, but was unsuccessful. Finally, he did manage to get it to take off, but it was obvious that it had not sufficient reserve of power to make it safe to fly around the course. By a piece of very excellent piloting, he made a few circuits of the aerodrome, without, however, being able to gain any height, and in the end he had to land. It was stated that at no time could the engine be made to give more than about one-half its power, so that the feat of getting the machine into the air at all was a considerable achievement. There is little doubt that had the engine been working properly, the Avro would have flown very well indeed.

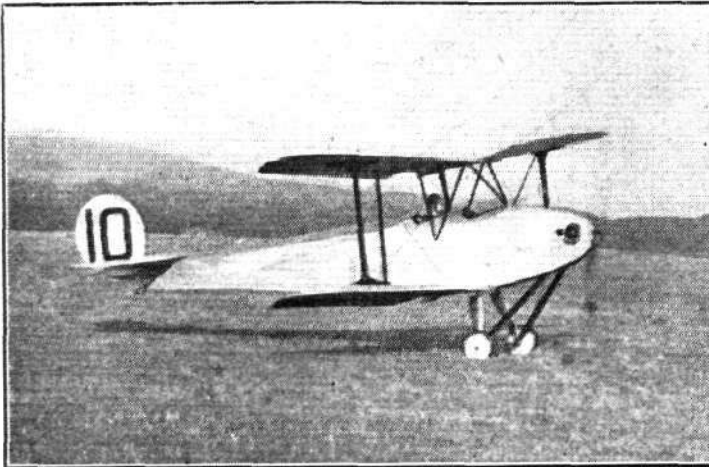
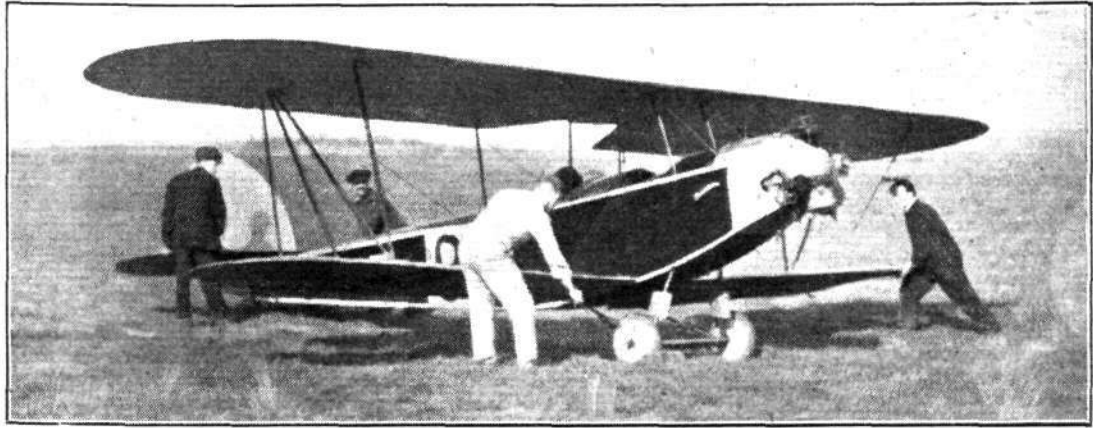
The Vickers "Vagabond," No. 16, never got as far as making an attempt to get off, the work on the engine and its installation taking up the whole time available, and so Sunday evening came without Squadron-Leader Payn having had a chance to fly the machine over the course. It was noticed that the vibration when the engine was being run on the ground was terrific for some reason, and before the trouble could be located and a remedy found, the time limit was up.

"And then there were eight" was the sad chorus by 6 o'clock on Sunday evening, and out of the 18 machines originally entered, seven had failed for one reason or another to pass their tests. No. 12, the Blackburn "Bluebird," has not put in an appearance, it having been found impossible to finish the machine in time. There are but two Parnall machines in the competitions; both are being flown as biplanes (it will be remembered that the Parnall machines are convertible from monoplanes into biplanes and *vice versa*); and



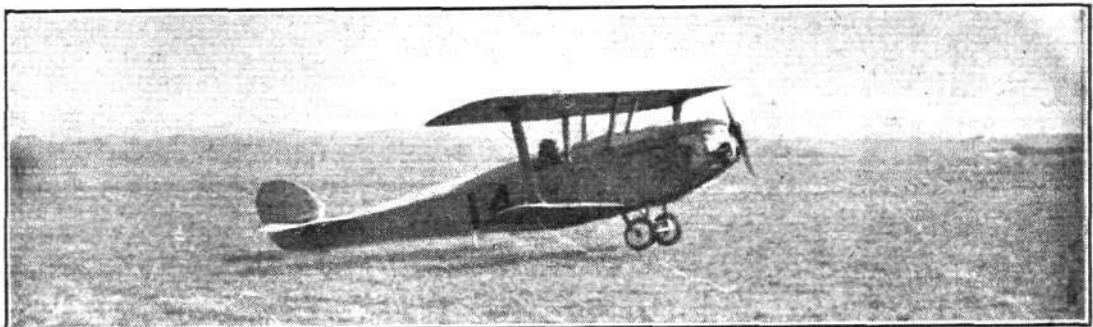
The Short "Satellite" monoplane, making a trial flight at Lympne.

At Lympne:
Testing the
Blackburne en-
gine of the
Supermarine
"Sparrow."



The Avro "Avis" has difficulty in getting "unstuck."

The Light 'Plane
Competition,
Lympne: Longton
on No. 14, the
Hawker biplane,
"Cygnet," land-
ing after the first
circuit in the
eliminating
trials.



the third machine, entered as a monoplane, has not put in an appearance.

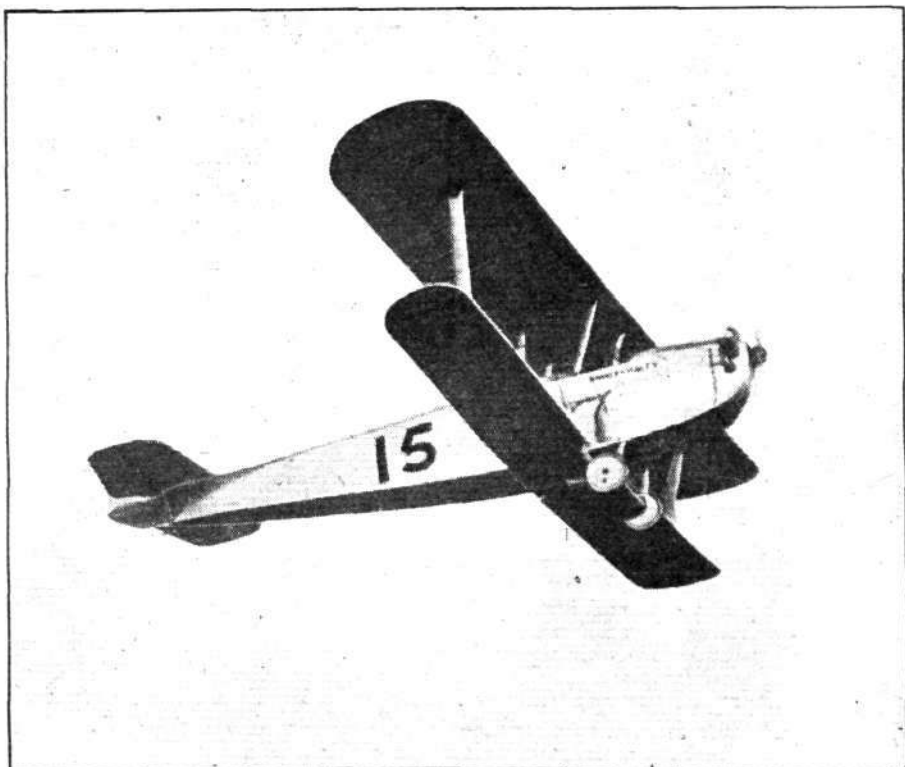
Today (Monday) there has been a high wind, and during the morning no competitor ventured out. By about lunch-time the Supermarine had got its engine running well, and Biard took the machine for a "flip." It flew strongly, and the new Blackburne engine seemed to be running very well. However, the machine is not permitted to take part in the competitions, so that whatever flying it does during the week will not count towards the prizes, although we think the machine will probably create a very favourable impression.

During the afternoon the wind moderated somewhat, and Piercey brought out the Beardmore "Wee Bee," and got ready for his speed tests. The machine took off very well indeed, and flew strongly, Piercey making very pretty banked turns around the aerodrome turning-point. Although he was actually lapping at something like 70 m.p.h., Piercey was not, we believe, going "all out," so that should a favourable opportunity occur later in the week, he will improve his figure considerably. At the same time, the two sets of laps will count towards the 10 hours' flying required during the week, so that either way he was doing very well. The "Wee Bee" flies exceptionally well, and its Bristol "Cherub" runs extremely smoothly and apparently without a falter.

About half-an-hour after Piercey started, Longton brought out his Hawker "Cygnet I," and flew several laps of the course. He was not, however, doing sets of fives, but was merely running-in his Anzani engine at quite low speed, and, incidentally, putting in useful time towards his time aggregate as well. This machine also flies strongly, and gets off and climbs well. The two Hawker machines are among the prettiest in the competitions, and really they are a triumph of structural design, being far and away the lightest machines flying at Lympne.

The Cranwell biplane also made several circuits, and, although slow, seemed to fly very well. Given a calm day, this machine should be able to get around the course at 60 m.p.h., and will probably do well on the low-speed tests. On a windy day, however, it falls short of the minimum top speed stipulated, but the laps flown today or rather the time spent in the air, will, of course, count towards the 10 hours' total demanded.

Late in the afternoon, one of the Parnall "Pixies" also covered a few laps, as did also the Westland biplane. The Beardmore "Wee Bee" was, however, the only machine to complete a set of 10 laps in the high-speed test.



Raynham, on the Hawker biplane, flying at Lympne.

A Busy Scene at
Lympne: Pushing
out the Vickers
"Vagabond"
biplane (Bristol
"Cherub").



Lympne, Tuesday evening
The early hours of this morning looked far from promising and there were indications of a change in the weather. Scattered clouds were lying very low and there was a feel of rain in the air. Nevertheless, there was great activity on the aerodrome and in the sheds long before the opening hour of 10. Engines were being overhauled and tested, and a goodly number of visitors arriving shortly before 10 found plenty to watch.

Several of the machines were wheeled across to the northern side of the aerodrome shortly after 10, the first to get away being Haig on the Parnall "Pixie IIIa" biplane. He was followed a few minutes later by Piercey on No. 4, the Beardmore "Wee Bee I," whose high-speed test of two sets of

No. 19 did not find things to his liking, and returned to the aerodrome, where he made an excellent landing.

In the meantime Longton had got his Anzani running, and made a very good take-off on Hawker No. 14, in spite of the fact that the grass was rather long for his small wheels. Without losing any time Longton got on his course and commenced "lapping."

The Bristol "Brownie," No. 1, took off a couple of minutes after Longton and swung around the tent and onto his course as if making for the Postling turning point. While still within the aerodrome, however, he turned left, and for a few minutes he cruised around and then landed.

Shortly before noon, Hinkler was seen to be coming down, and after a circuit or two of the aerodrome he made a perfect



The Parnall
"Pixie III"
half-breed at
Lympne. This
machine, No. 18,
is fitted with a
Bristol "Cherub."

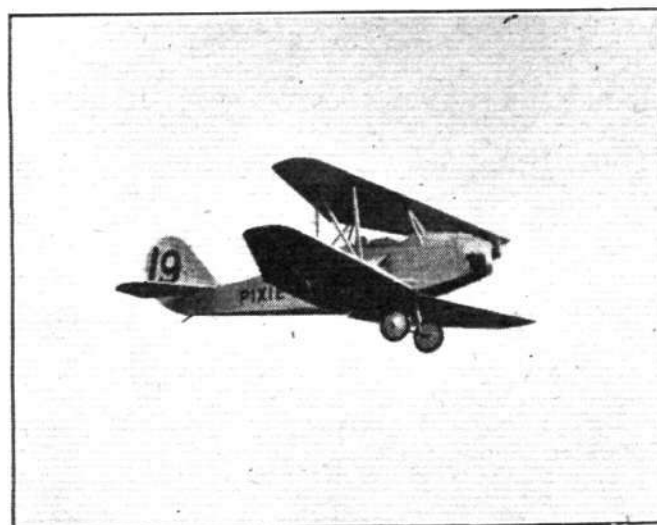
five laps of the course on Monday gave an average speed of 70.11 m.p.h. and a total time of 1 hr. 46 mins. 58 secs. This time, of course, counts towards the 10 hours' flying stipulated as the minimum to be done during the week. Considering the high wind on Monday, an average speed of over 70 m.p.h. must be regarded as distinctly good, especially as Piercey was by no means going "all out."

The Cranwell biplane, No. 3, did three laps of the course during Monday—a distance of 37½ miles—and put in 1 hr. 4 mins. 28 secs. towards the 10 hours. Although slow, this machine flies very well, and every one is full of admiration for the splendid effort which the Cranwell amateurs are making.

However, to return to today's work, Hinkler had had his engine and mounting seen to, and as everything seemed to be working well, he decided to take the Avro for a flip, although she is, of course, out of the competition. His take-off was reasonably good, and for a time Hinkler kept cruising over the aerodrome, gaining height. He was soon above the low clouds, and only occasionally could one get a glimpse of him. As he got up to about 2,000 ft. he began to do sharply banked turns and seemed to be quite enjoying himself.

Shortly before 11 the Parnall biplane, No. 18, landed after having been up for about half an hour. Its "sister ship," No. 19, took off a few minutes after 11. He was tossed about a good deal by the gusts and eddies coming in over the trees to the south of the aerodrome, and instead of rounding the aerodrome turning-point he kept straight on, going to the edge of the ridge, over which there is usually a strong upward current which many have found useful for getting a little extra lift. Turning along the ridge for a short distance,

three-point landing, the Avro "Avis" pulling up practically in its own length. Longton seemed to be away longer than he should have been, and just as his ground staff were beginning to get anxious, a telephone message came through that he had landed in a small field at Monks Horton shortly



The Second Parnall "Pixie III" mono-biplane,
No. 19, in flight.

after passing the Postling turning point. He reported a cracked petrol tank, but otherwise all safe. A spare tank was dispatched to him by car, and this was quickly fitted, after which Longton flew his machine out of the small field, and back to the aerodrome.

The two Parnall "Pixies," Nos. 18 and 19, went out again about noon, and on one of their laps they came across the aerodrome side by side, making a very pretty picture.

Raynham had gone out on the No. 15 Hawker while Longton was "missing," but only covered one lap, as his engine cut out. When he thought he would have to make a forced landing, his engine picked up again, first on one cylinder and then on the other, and he was fortunately able to get back to the aerodrome.

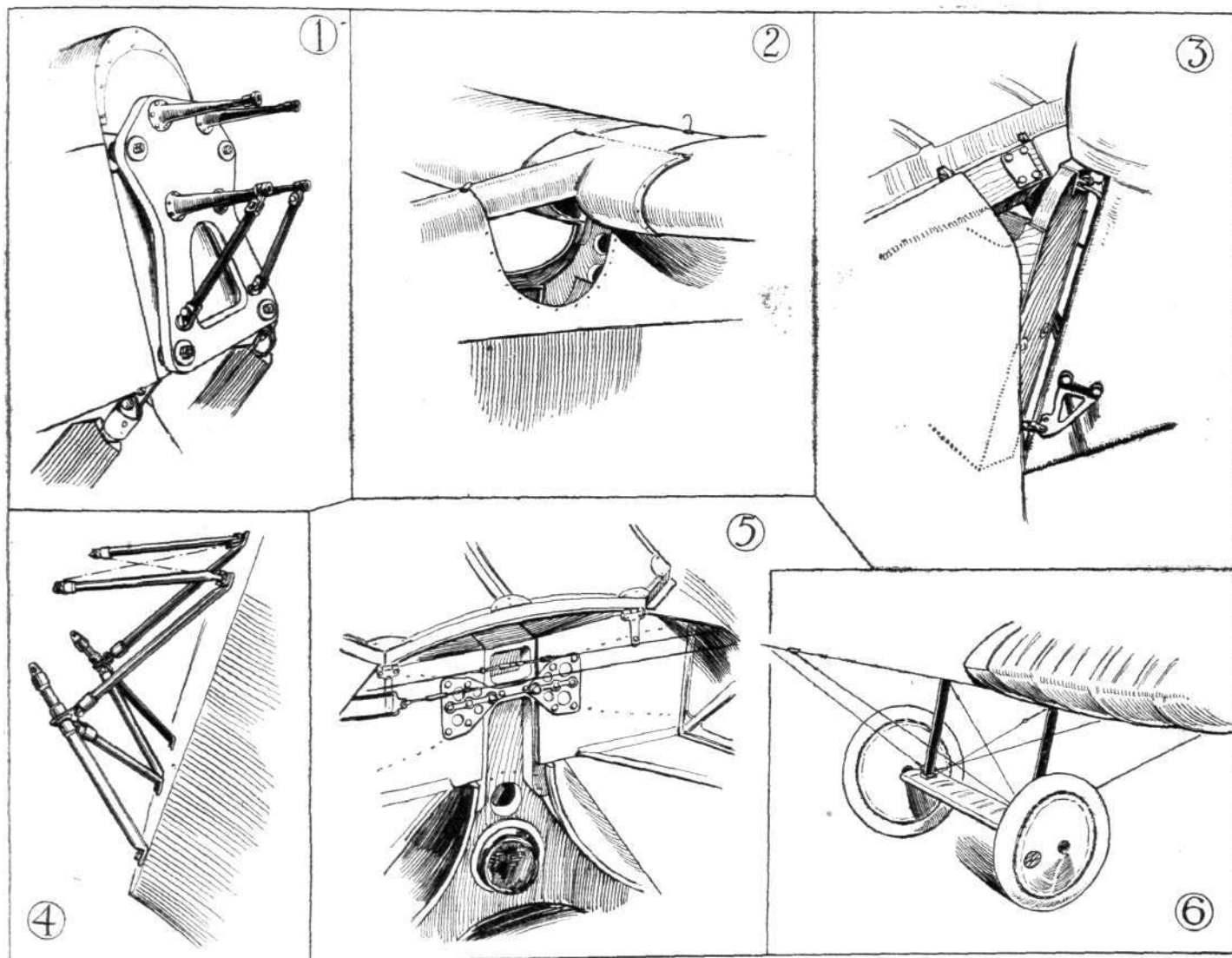
Uwins on Bristol "Brownie," No. 1, got away for a second attempt at about half-past 12, and this time he carried on towards Postling. No. 3, the Cranwell biplane, took off shortly afterwards and took up his task of putting-in flying time over the course, going well in spite of the strong wind.

Meanwhile, the two Parnall "Pixies," Nos. 18 and 19, had both met with misfortune. No. 18 "sat down" suddenly, just outside the aerodrome. It was found that the Bristol "Cherub" had pushed a connecting rod through its crankcase. Mr. Bolas himself was a passenger with Flight-Lieut. Haig at the time, and as he expressed it, he "thought the 'bus was dropping to pieces." The second "Pixie" landed somewhere out on the course, the Blackburne engine having seized on its lower port cylinder.

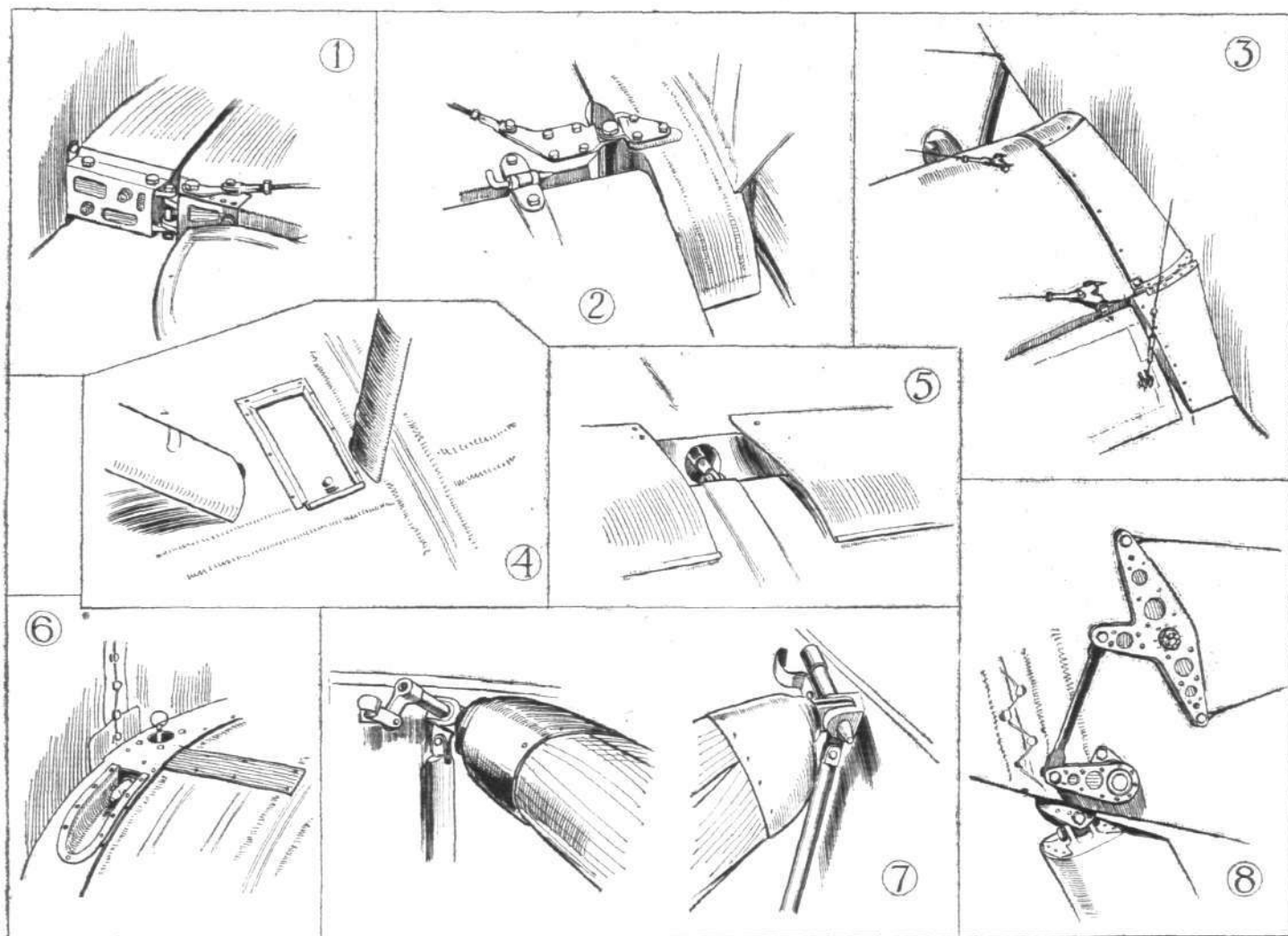
Piercey landed the "Wee Bee" shortly before 1 p.m., after having completed nine laps. On examining his engine, it was found that a valve spring had broken, but this was soon replaced and his machine got ready for the afternoon's flying.

In the afternoon the weather began to look still more threatening, and the meteorological people talked glibly of line squalls and other forms of "frightfulness." About two o'clock it began to rain, and for the rest of the afternoon there was an unpleasant drizzle, which made it very uncomfortable for the spectators and a great deal more so for the competing pilots. In spite of this, however, many of the machines were "up and doing," notably the Hawker "Cygnet I," piloted by Longton, and the Cranwell (No. 3), flown by Flight-Lieut. Mackay. Another competitor who managed to put in a good deal of time towards his 10 hours was Uwins on No. 1 Bristol "Brownie." Although the rain and gusty wind made flying very unpleasant, these three stuck to their job and made circuit after circuit. Again the Cranwell machine and its plucky pilot came in for favourable comment, and one heard repeatedly expressed the wish that more of the spirit might be found which animates these enthusiasts of the Cranwell Light Aeroplane Club. Certainly their stout effort is worthy of all praise, and they deserve to have all the luck possible. Their Bristol "Cherub" appears to be running very well indeed, and, barring unforeseen accidents, No. 3 should do well both in the reliability test and in the slow-speed test. One's only fear is that the Cranwell may not be lucky enough to get a day sufficiently calm for it to cover the circuit in the high-speed test at 60 m.p.h.

By closing time today (Tuesday) the scoring-board told the following story: No. 1, the Bristol "Brownie," had done eight laps of the course and put in 1 hr. 56 mins. 44 secs. flying. No. 3, the Cranwell biplane, had to his credit a distance of 137½ miles (11 laps of the course), with a flying time of 3 hrs. 38 mins. 28 secs. Longton's "Cygnet I"



CONSTRUCTIONAL DETAILS OF LIGHT PLANES AT LYPMNE: (1) Mounting for Bristol "Cherub" on Avro "Avis." (2) Front cockpit covering of Beardmore "Wee Bee I." Leading edge and top cover of cockpit. (3) Rudder and elevator hinges on Avro "Avis." The hinge back for getting into and out of cockpit. (4) Mounting of Bristol "Cherub" in Parnall "Pixie IIIa." (5) View into rear cockpit of Beardmore "Wee Bee I," showing spar attachment to top of fuselage. This cockpit is covered by a hinged window of celluloid. (6) Under carriage of Bristol "Brownie"



SOME MORE CONSTRUCTIONAL DETAILS FROM LYPNE: (1) Hinge on lower rear spar for folding wings of Supermarine "Sparrow." (2) Spar and flap hinges on Vickers "Vagabond." Note the joint in the fuselage which allows of setting the angle of the rear portion. (3) Bottom plane attachment to wing roots on Sopwith-Hawker "Cygnets." The wing roots are covered with aluminium. (4) Inspection door and steel attachments on lower starboard wing of Parnall "Pixie IIIa." (5) The aileron gap in the "Wee Bee I" is covered with aluminium strips. The aileron is hinged at bottom edge, and is operated direct from upper edge by a pull-and-push rod. (6) Locking-pin arrangement on rear spar of Bristol "Brownie." (7) Wing bracing strut quick-release on Parnall "Pixie IIIa." The small tubular strut runs to root of lower front spar. (8) External elevator cranks on Westland "Wood Pigeon." Sketch also shows front chassis strut attachment.

(No. 14) had totalled 100 miles in a flying time of 2 hrs. 36 mins. 43 secs., while Raynham had made one lap of the course on the other Hawker biplane (No. 15) in 18 mins. 30 secs. Flight-Lieut. Haig's Parnall "Pixie IIIa" (No. 18) had to its credit three laps (37½ miles) in 44 mins. 55 secs.,

and the second Parnall, piloted by Sqdn.-Ldr. Douglas, had one lap and 21 mins. 22 secs. to his credit. The engine breakdowns which these two machines suffered have definitely put them out of the running, and it is believed that Mr. Bolas will now concentrate on the Grosvenor Cup Race on Saturday.

THE RACE FOR THE AIR

The race for the Air League Challenge Cup was flown on three Sopwith Snipes, from each of the following squadrons: No. 25 (Hawkinge), No. 32 (Kenley), and No. 56 (Biggin Hill) on October 1, starting and finishing at Lympe aerodrome.

Though the weather was beautiful on Lympe Aerodrome, mist hung over Kent, and the three squadrons had great difficulty in getting through from Biggin Hill, where they had all collected. Spare "Snipes," however, had been sent on ahead to Lympe, and this proved lucky. At 2.30, half an hour late, the formation of three waited in the sky, led by Air-Commodore Samson, in a "Siskin." The formation flying was beautiful, and as they circled the aerodrome it was a very pretty sight. The landing, however, was not a great success. No. 32 from Kenley attempted to come down too near the southern edge of the aerodrome, and had to switch on and climb again over some telegraph wires. Flying Officers Scott and Vincent cleared them, but Pilot Officer Broadway could not climb fast enough, and, therefore, did a steep bank to the left. His port wing touched the ground and swung the starboard wing into the wires. The machine spun right round and collapsed with the fuselage the right way up, but all wreathed in broken telegraph wires. Broadway was unhurt. He is the pilot whose machine was burnt at Wembley the other day, so he must bear a charmed

LEAGUE CHALLENGE CUP

life. Everyone expected that a spare pilot would take his place in the race, but despite the severe shock he had had, he pluckily climbed into a spare Snipe and lined up with his fellows. Just about three o'clock a start was made. No. 25 Squadron from Hawkinge took off first, and 32 from Kenley followed in about five minutes. 56 from Biggin Hill, led by Squadron-Leader Sir Christopher Brand, was the third to leave the aerodrome. The course laid out, and only disclosed to the competitors a quarter of an hour before they started, was from Lympe to a windmill ten miles north of Brighton, then to a railway bridge at Charing, and return to Lympe—100 miles in all. About 50 minutes later a formation appeared in sight, and glasses disclosed that this was Kenley, which had started second. They were followed very closely by 56 from Biggin Hill, while Hawkinge, which started first, was an appreciable distance in the rear. The times taken at Lympe Aerodrome for the circuit were:—

56 Squadron (Biggin Hill) 46 mins. 28½ secs.
32 Squadron (Kenley) 50 mins. 44½ secs.
25 Squadron (Hawkinge) 59 mins. 7½ secs.

However, it afterwards transpired that Kenley and Biggin Hill had both cut the western turning point and that explains why Hawkinge returned third. They were the only flight which had gone round the full course. The Air League Challenge Cup therefore goes to No. 25 Squadron.

THE BRITISH WORLD FLIGHT ATTEMPT

MacLaren's Own Account of the Adventure

"We have failed, but we did our best." With these words Squadron-Leader A. S. C. S. MacLaren, O.B.E., M.C., D.F.C., A.F.C., concluded a brief narrative of the events which led ultimately to the abandonment of the attempt to fly around the world in the Vickers-Napier "Vulture" amphibian. The occasion was a luncheon given by the chairman and directors of Vickers Limited, D. Napier and Son, Ltd., and Shell-Mex, Ltd., in honour of Squadron-Leader MacLaren and crew of the Vickers "Vulture," at the Hotel Cecil on September 25. A distinguished company was presided over by Sir Trevor Dawson, vice-chairman and managing director of Vickers Ltd., who was supported by the Right Hon. J. R. Clynes, P.C., M.P.

In proposing the health of Squadron-Leader MacLaren and his colleagues, Sir Trevor Dawson expressed regret at the absence of Sergeant Andrews, who was prevented by illness, contracted during the flight, from being present. He congratulated the guests on their indomitable courage in the face of great difficulties, difficulties which it was quite impossible to provide against, and on having succeeded in maintaining the spirit and tradition of the Royal Air Force. Sir Trevor Dawson also referred to the great services which the Royal Air Force had rendered, both in the preparation of the flight and during the whole journey. Air Vice-Marshal Sir Geoffrey Salmond and his officers were always ready and willing to assist in every way in their power. He also expressed indebtedness to the Greek Government, the Imperial Japanese Government and the United States for the very valuable assistance rendered.

The Right Hon. J. R. Clynes, supporting the toast, said he associated himself personally and as the representative of the Government with the great adventure which had brought them together that day. He had read in various newspapers the very modest commentaries of MacLaren and his colleagues, and said there was a touch of real greatness in the belittling and under-estimating of the mighty enterprise which they undertook. The work of the pioneer was impossible without risk and sacrifice, and the pioneers who had not themselves succeeded had always prepared the way for others who succeeded in the end. He thought it would be a blessing to mankind if these tremendous instruments of the air could be devoted solely to civil purposes, so that trade and commerce might be assisted.

Squadron-Leader MacLaren, in responding, addressed the gathering as follows:—"Mr. Chairman, your excellencies, ladies, wife, and gentlemen" (Mrs. MacLaren, with several other ladies, occupied seats in the gallery). He commenced by offering congratulations to the American airmen who had, within the last few hours succeeded in completing their flight around the world. Their feat was a landmark in human history which would never be forgotten as long as

man preserved his sporting instinct. They rejoiced exceedingly, he said, in the success of their American friends, for when their need was most urgent the Americans had proved friends indeed. He also expressed the great indebtedness of himself and his companions, Flying-Officer Plenderleith and Sergeant Andrews, to the Italians at Rome, to the Greeks at Corfu and Athens, to the Persian and Siamese governments, to the French in France and Indo-China, and the crowning hospitality of the Japanese. The flight was a purely unofficial one, but nevertheless they owed a debt of gratitude to the Royal Air Force and to the Air Ministry.

Following is MacLaren's account, in his own words, of the incidents of the flight.

"And now I should like to say a word about the three firms whose generosity enabled me to organise the flight.

"It is obvious that the selection of material for an enterprise of this nature entails the most careful consideration and important decisions. I, therefore, took the opportunity of discussing the matter with many experts, and the final result was that the combination of Vickers, Napiers and Shell-Mex stood out from any other as giving me my best chance of success. I was indeed fortunate in not having to make any change in this decision through their immediate readiness to co-operate with me in my venture, and I do indeed pay this tribute from the bottom of my heart.

"Our most grateful thanks are due to Vickers, for their wonderful Vulture Amphibians; to Napiers, for the splendid engines, which carried us across two continents for a total distance of 13,000 miles; and to Shell-Mex for the supply of petrol and oil, which was never found wanting on all our long route. If the flight did not achieve the complete success which we had hoped, it was not the fault of any of these three great companies.

"The machine was ideal in every way for the venture, the amphibian being undoubtedly the best for the job, and actually saved our lives on more than one occasion, and I cannot sufficiently express my admiration for the way in which she behaved under the most trying and adverse conditions. The engines carried us thousands of miles without causing us the slightest anxiety, and no blame can be attached to them for the unfortunate mishaps at Corfu and Parlu, and the quality of petrol and oil speaks for itself, when I say that not once throughout the whole of the trip had we to do anything except pour it into the tanks.

"We were beaten in the end by fog alone. Vickers, Napiers and Shell not only made our flight possible, but did everything in their power to ensure a successful issue. We give our most cordial thanks.

"I would also like to pay tribute to my very gallant companions, Flying-Officer Plenderleith and Sergeant Andrews, whose courage and devotion to duty brought us safely through



THE BRITISH WORLD FLIGHT ATTEMPT: The above is a sketch-map showing the route taken by Squadron-Leader MacLaren on his attempt to fly round the world on a Vickers Napier amphibian biplane. The names of the principal places at which they stopped are shown, but for clearness' sake a few of the intermediate stopping-places are omitted.

many a trying ordeal. Flying Officer Plenderleith piloted the machine the whole time, and never once was his judgment at fault, in spite of the many tight corners we got into. Sergeant Andrews worked incessantly, and his pluck and endurance in working on the machine under the most trying conditions was nothing short of marvellous, and many times he refused to give up even though he was unfit to carry on.

"I do not know that there is anything very fresh to say about the flight itself. You have probably read in the Press the brief accounts of the different stages which I was enabled to send home through the co-operation of *The Times*. Still, perhaps, before I sit down, you might like me to run over as quickly as possible some of the incidents which made the greatest impression on our minds.

"It was on the 25th March, six months ago to the very day, that we started from Calshot. Before an hour had passed, we had a taste of what was in store for us. Our arch-enemy fog was waiting for us in the Channel, and we were within a few feet of a collision with the French cliffs near Havre. We had awful weather for our journey across France and Italy, and we had our next bad shock while we were crossing the Apennines.

"It was pouring with rain, and the mountains were covered with low clouds. Whilst we were groping about in the almost pitch darkness, navigating entirely by the aid of the Reid Turn Indicator, without which we should have several times come to grief, and when our nerves were very near breaking point, a small gap appeared in the clouds below us. We found ourselves in a small valley, in which to our joy we saw a railway line. This gave me a clue to our position, but I don't know what we should have done if we had come to a tunnel. We should either have gone through leaving our wings behind, or have gone aloft to do other and better ones. In the end we reached Brindisi safely.

"Our next little incident was at Corfu. We had just completed the sea crossing from Italy, when the engine came to a sudden stop with a tremendous vibration. We were forced to come down immediately, and by great good fortune we were immediately above a large lake. As it turned out, it was the only possible landing place for miles. All the same, we were ten miles from the nearest village, and it was rough work camping out in that wild spot.

"First the Greek Navy and then our own came to our aid. The machine was hauled out of the lake, got into the sea and towed to Corfu, where a new engine, which had been sent overland from England, was installed from the battleship, the *Emperor of India*.

"On leaving Corfu, we thought that our troubles were over. The weather was beautiful, and we arrived at Cairo by moonlight.

"We then made good time to Baghdad, after losing sight of the desert track once but picking it up again after an anxious half hour. All went well from Baghdad to Karachi. Then our tribulations began again. We had the same trouble as at Corfu, and were forced to descend in the scorching Sind desert, near the village of Parlu. Here we had to wait seventeen days for another engine, which the Royal Air Force very kindly sent us from Baghdad.

"When we got on the move again we had little to chronicle until we reached Akyab, a stage beyond Calcutta. Here we ran into the monsoon, and had to kick our heels for three days whilst our machine was soaked by torrential rains. On Empire Day we set off once more. No sooner, however, had the machine risen in the air, just clearing the tops of the trees at the end of the aerodrome than she began to drop, striking the water in the harbour with such violence that her hull was badly damaged. The machine began to sink at once. A boat quickly came to our rescue, and we managed to tow the machine in shore and beach her.

"The damage, however, proved too serious to be repaired. It seemed that she was unable to remain in the air, chiefly because she was water-logged by the torrential rains, which aggravated the condition in which she had been left by seventeen days in the open in the scorching Sind desert, and the fact that we had to carry a larger supply of fuel than anticipated owing to strong contrary winds. After we had shaken off our first awful disappointment, we telegraphed home asking that our spare machine, which was awaiting us at Tokyo, might be sent to Akyab as quickly as possible. But before we could get an answer, we received a telegram from Japan saying that the American Navy was already bringing us our machine at full speed. Here we decided to cut out all luxuries in view of the fact that we were flying through the tropics in the monsoon season, when the weather was unfit for even a dog to be out in. In effect this meant that, instead of the machine being loaded to 7,000 lbs., except for some of the longer trips where she was a bit heavier

and including the one from Athens to Cairo when she was loaded to 7,500 lbs., we managed to reduce her to somewhere in the neighbourhood of 6,500 lbs. Our action appears to have been entirely justified, for, after leaving Akyab to the time of our unfortunate crash at Nikolsku on Bering Island, we did not once have to make the slightest adjustment to machine or engine, which ran the whole time as consistently as possible.

"When we started off again, we had shocking weather between Akyab and Rangoon. Again between Rangoon and Bangkok we were forced to descend at Tavoi, as we were unable after several attempts to get across the big range of mountains separating Burma from Siam. This we accomplished on the following day, but our hearts were in our mouths most of the time.

"The fun began again when we reached the great range of mountains that divides Siam from Indo-China. The mountains were covered with heavy clouds, and although we climbed 8,000 ft., the higher we got the higher the clouds seemed to be. By this time, we had all got the wind up. We decided to go back a little way to try and find some opening in the clouds. Luckily, we found a hole, and sighted an open clearing in the middle of the jungle. As we approached this clearing, with a view to landing and waiting for the weather to clear up, we saw something moving and discovered it to be a herd of elephants, which rushed into the jungle at our approach. We could also see many buffalo and deer. When making a final tour of inspection at a height of only a few feet, the grass seemed to be inordinately long, and we then found to our horror that the clearing was a vast swamp. There was only one thing to do, and that was to climb up through the thousands of feet of cloud again. Somebody must have been looking after us that day, for a patch of blue sky appeared above us. We dashed into the breach, keeping our eyes glued to that blue patch, sometimes losing it for a moment and then finding it again and using it as our horizon. We chanced our luck on a compass course, and after an hour's flying over impenetrable cloud were rewarded with a sight of the sea in the distance.

"The three of us solemnly shook hands on it. From Indo-China to Hong-Kong, Shanghai, and across the China Sea to Toyie, there was nothing of special interest to relate. We stopped a few days at Tokyo, where the most enthusiastic reception was given to us by the Japanese people and the Navy, Army and Air Force, who could not do enough for us, getting the machine in readiness for the next stage of the flight, the most difficult one of all. Here we took Colonel Broome on board, together with stocks of food, a small silk tent and sleeping bags, and left behind our wheels and under-carriage. We had hardly got under way from Tokyo than we ran into fog, and had to make three forced landings during the first day's flight. However, we reached Yotorup, the first of the Kurile Islands, in safety, and landed in a large lake. Dense fog delayed us a day, and when we finally got off we met with nothing but fog and storms. We had to turn back and land in a small open bay on Tokotan, another of the Kurile Islands. Our anchors failed to hold, and it was with the utmost difficulty that we prevented the machine from being dashed on to the beach. Plenderleith, clad only in his shirt, as the rest of his clothes was spread out on the beach to dry, first taxied the machine out to sea, and then landed her in a small lake just inland. The machine weathered one of the most unpleasant nights I have ever spent, but the succeeding days brought nothing but dense fog, rain, and gales. On the third day a Japanese destroyer, which had been searching for us, arrived and told the world that we were safe. Plenderleith was taken sick, but quickly recovered, and we were able to resume our journey on the seventh day after landing at Tokotan.

"The passage along the Kuriles was an extremely anxious one. There was dense fog the whole way up, but Providence looked after us, and we safely reached Petrapavlovsk in Kamchatka. There we found awaiting us the *Thiepval*, the gallant little ship that had laid down our supplies, and without which we should not be here today.

"Now I come to the last day of our flight, August 2. We left Oest Kamchatka with a 130-mile sea crossing in front of us. We were within 30 or 40 miles of our destination, when the fog became so solid that we were forced down to within 50 ft. of the water. As we neared the coast, the fog got lower and lower, until we were flying only a few feet above the water. Suddenly a black object loomed up straight in front of us, and only a quick swerve saved us from crashing into the cliffs of a small islet. By this time we were almost in a state of nervous prostration, so we decided to land in the open sea, although there was a heavy sea running. Plenderleith brought the machine down perfectly, but just after we had

touched the water a large wave caught our wing tip float, smashed it to pieces, and buried the end of the wing under water. This caused the machine to swing suddenly round, the port wing broke up, and the sea catching the other wing tip float smashed that and the starboard wing tip as well. We hastily put on our lifebelts, but, thanks to the sturdy construction of the hull, the machine took the strain without breaking, and we were safe for the moment.

"We were now in a very real quandary, for we had completely lost our bearings. The fog was so thick that we could not see more than 50 yards in any direction. The heavy sea was breaking up the wings completely, and we knew that the moment these gave way the machine would overbalance and sink. Our only hope lay in the hope that my navigation was correct, which should have placed us just south of Bering Island.

"This meant that we should proceed in a northerly direction. It was essential to keep the machine on the move, as this was the only method of keeping the wings out of the water. Plenderleith taxied the machine slowly northward, while Broome and I ran up and down the planes trying to keep them balanced in a horizontal position so that the ends would not dip under water. Our agonies were increased by a strong wind which was now blowing behind us from the south, and it was with the greatest difficulty that we could steer the required course. After about three hours of this anxiety, during which we had scarcely made any headway, the fog suddenly lifted, and we saw, half a mile to the north, the coastline. I can assure you that this was the most welcome sight that had ever met my eyes, for in spite of our efforts to keep the wings out of the water, they were gradually breaking up. We quickly reached the shore, and anchoring the machine just off the surf, all jumped into the icy water, and gained the beach safely, only a mile or two from Nikolski.

This was the end of our attempt, and I am not ashamed to say that I wept bitterly. The *Thiepoal* arrived the next morning, and salvaged the remains of the machine.

"That is our story. We would not have missed the adventure for worlds; we did our best, and failed this time. I will say nothing of our luck; that is all in the game. But I will never say anything disrespectful of a London fog again. It is now established that it is possible to fly round the world. I believe it can be done in less time than Jules Verne's eighty days, and also by one British machine and one British engine.

"Once more I should like to thank you for the very hearty welcome you have given us, and to say that, although we have failed, we did our best."

It is impossible to give a full list of the names of the 300 guests or so who joined in the welcome to Squadron-Leader MacLaren and Flying-Officer Plenderleith, but the company included: the American, Greek and Japanese Ambassadors, the Lord Privy Seal (The Right Hon. J. R. Clynes), Air Vice-Marshal Sir Geoffrey Salmond, Air Vice-Marshal Scarlett, Mr. S. Samuel, M.P., Lord Herbert Scott, Sir Henry White-Smith, Rear-Admiral Sueter, Sir G. O. Thurston, Commander J. H. Towers, Air Commodore Longcroft, the Hon. Sir E. Lucas, Lieut.-Col. McClean, Lieut.-Col. Marsh, Col. Mossberg, Air Commodore Munro, Mr. T. P. O'Connor, M.P., Col. C. P. Ostoic, Lieut.-Col. Pelletier, Lieut.-Comdr. Perrin, Comdr. A. de Bahr, Wing-Comdr. Barker, Admiral Mark Kerr, Air Commodore Borton, Lieut.-Col. Bouverie, Sqdn.-Leader Sir C. J. L. Brand, Lieut.-Col. Bristow, Sir Vincent Cailland, Dr. Chalmers Mitchell, the Hon. H. P. Colebatch, Air Commodore P. Drew, Air Vice-Marshal Game, Brigadier-General Sir Capel Holden, Air Commander Higgins, Col. Kenyon Joyce, Mr. F. C. Broome, Comdr. Don Edgardo von Schroeders, Capt. de Corvette Sable, Capt. V. Gordon, Capt. Hussey, Capt. H. E. P. D. Acland, and Capt. Cockerell.

AMERICAN WORLD-FLIGHT CONCLUDED

ON Sunday, September 28, the American Flight Round the World was brought to a successful conclusion, when the three Douglas World-Cruisers (Liberty engines), the "Boston" piloted by Lieut. Lowell Smith, the "Chicago" piloted by Lieut. Erik Nelson, and Lieut. Leigh Wade's new machine (which replaced the "New Orleans" lost off Iceland), together with the respective observers, Lieut. L. P. Arnold, Lieut. J. Harding, and Serg. Odgen, all arrived at Seattle, where the flight "officially" commenced on April 6 last. Actually, they—including the leader of the expedition, Major F. L. Martin—started from Santa Monica (California) on March 17, at which place they arrived back on September 23. From Santa Monica, the 965 miles to Seattle was completed in three easy stages on September 25, 27 and 28.

We give, briefly, below the log of the great flight, from start to finish, which will serve to indicate the progress made day by day and from place to place, with the distances in miles (approximate) between each stage. The "grand total" figures are stated to be as follows:—Total elapsed time, 175 days; mileage, 27,534; days actually in the air, 66; actual flying time, 351 hrs. 11 mins.; average speed, 76.36 m.p.h.

March 17—Santa Monica-Sacramento (350). March 18—Sacramento-Eugene (375). March 18—Eugene-Seattle (240). April 6—Seattle to Prince Rupert, B.C. (650). April 10—Prince Rupert to Sitka, Alaska (300). April 13—Sitka to Seward, Alaska (600). April 15—Seward to Chignik, Alaska (450); the "Seattle" (Major Martin) forced down at Kanatak with a leaking crankcase. April 17—Chignik to Dutch Harbour, Unalaska (400). April 25—Plane "Seattle" flew from Kanatak to Chignik. April 30—Plane "Seattle" left Chignik for Dutch Harbour, but crashed into mountain. Crew saved and walked to Port Moller, arriving ten days later. May 3—Three remaining planes, "Boston," "Chicago" and "New Orleans," flew from Dutch Harbour—Nazan (Island of Atka) (350). May 9—Nazan-Chicagoff (530). May 16—Chicagoff-Komandorski-Kashiwabara Bay, Paramushiru (900). May 19—Paramushiru, Hito Kappu Bay-Yetorofu (510). May 22—Yetorofu-Minato-Kasumiga Ura (780). June 1—Kasumiga-Ura-Kiushimoto (350). June 2—Kiushimoto-Kagoshima (380). June 3—Kagoshima-Shanghai. Planes "Boston" and "New Orleans" (610). June 4—Kagoshima-Shanghai. Plane "Chicago." June 7—Shanghai-Amoy (555). June 8—Amoy-Hong Kong (300). June 11—Hong Kong-Haiphong (500). June 13—Haiphong-Tourane (395). June 16—Tourane-Saigon (530). June 18—

—Saigon-Bangkok (675). June 20—Bangkok-Tavoy-Rangoon (450). June 25—Rangoon-Akyab (445). June 26—Akyab-Calcutta (400). July 1—Calcutta-Allahabad (475). July 2—Allahabad-Umballa (530). July 3—Umballa-Multan (325). July 4—Multan-Karachi (475). July 7—Karachi-Charabar (330). July 7—Charabar-Bendar Abbas (330). July 8—Bendar Abbas-Bushire (400). July 8—Bushire-Bagdad (455). July 9—Bagdad-Aleppo (480). July 10—Aleppo-Konia-Constantinople (585). July 12—Constantinople-Bucharest (290). July 13—Bucharest-Budapest-Vienna (650). July 14—Vienna-Strasbourg-Paris (650). July 16—Paris-London (225). July 17—London-Brough (155). July 30—Brough-Kirkwell (370). August 2—5—Kirkwell-Reykjavik (825). Plane "New Orleans," Lieut. Wade, down off Iceland. August 21—Reykjavik-Frederiksdal-Ivigtut (900). August 31—Ivigtut-Indian Harbour, Labrador (520). September 2—Indian Harbour-Hawkes Bay, N.F. (130). September 3—Hawkes Bay-Pictou, N.S. (455). September 5—Pictou-Casco Bay (410). September 6—Casco Bay-Boston (210). September 8—Boston-New York (200). September 9—New York-Washington (200). September 13—Washington-Dayton (420). September 15—Dayton-Chicago (294). September 17—Chicago-Omaha (440). September 18—Omaha-Muskogee (440). September 19—20—Muskogee-El Paso, Tex. (880). September 21—El Paso-Tucson, Arizona (300). September 22—Tucson-San Diego (375). September 23—San Diego-Santa Monica (120). September 25—Santa Monica-San Francisco (300). September 27—San Francisco-Eugene, Oregon (450). September 28—Eugene-Seattle (250).

While the American airmen met with extraordinarily enthusiastic receptions at the various places along their journey across the States, the scenes of joy and excitement on their arrival at Seattle were indescribable. Among the first to congratulate them was Maj. Martin, the original leader of the expedition. After a brief speech by Lieut. Smith, he and his companions—bedecked with flowers—were taken to an informal reception at Madison Park, and then to Volunteer Park, where there were more speeches, addresses of welcome, etc.

Maj. Zanni's Flight

HAVING received permission to land at Shanghai, Maj. Zanni, the Argentine airman who is attempting a flight round the world, left Hong Kong on September 27.

THE SECOND ROUND-AUSTRALIA FLIGHT

Some Details of the 7,658-Mile Journey

In previous issues of *FLIGHT* brief references have been made to the flight round Australia made by Col. Brinsmead this summer, and this week we are able to give some details of this flight given in a cable just received by the Air Ministry from Australia.

This flight was the second one round Australia to be made this year, the first having been accomplished early in the year by Wing-Comdr. Goble (on a Fairey III-D seaplane, 360 Rolls-Royce "Eagle") on behalf of the Australian Air Force and for the purpose of collecting information useful to the Defence Department. The Department of Civil Aviation in Australia also required information on the flying conditions in various parts of the Continent—especially in the north—in order that the civil air lines running in Australia might further be developed and extended. On August 7, therefore, Col. Brinsmead, Controller of Civil Aviation in Australia, accompanied by Capt. Jones (Superintendent of Flying Operations) and Mr. Buchanan, started off on a tour of inspection in a D.H.50 biplane, 230 h.p. Siddeley "Puma."

Starting from Melbourne, they flew first to Charleville and then followed the route of the Queensland and Northern Territory Air Services, Ltd., to Cloncurry. This route, it may be added, links up five railheads, from each of which a railway line runs down to the coast.

From Camooweal, beyond Cloncurry, they entered almost unknown country until they reached the sea and civilisation at Darwin. From here they flew more or less along the coast to Wyndham, where the West Australian Airways, Ltd., is about to extend its service. From Wyndham they flew

due south into the interior, following the Ord River to Hall's Creek, in the middle of the goldfield of the north-western hinterland.

Between Camooweal and Wyndham they saw thousands of square miles of magnificently watered country suitable for sheep-farming, but undeveloped owing to lack of communications. This section, Col. Brinsmead reports, offers an incomparable opportunity for aviation.

From Hall's Creek they turned westward towards the coast again, and linked up once more with the West Australian Airways at Broome. From Broome they flew over well-known ground to Perth, and then followed the line of the railway to Adelaide and Melbourne.

Although Col. Brinsmead, by flying overland on this section, avoided the rough experiences which were met with by Wing-Comdr. Goble when he made a short cut across the great Australian Bight, the overland route naturally took longer and extended over a greater distance.

Altogether they flew 7,658 miles in 76½ hours, and landed 35 times. The trip took 22 days, and in that time they did work for the Department which would by other methods of progress have occupied five or six months.

During the entire trip the only replacements on the Puma were two plugs and two inlet valves. On the D.H.50 the only replacement was an inclinometer tube, and the aeroplane flew back to Melbourne as good as new.

Col. Brinsmead reports that many of the stations which they visited are anxious to set up their own aeroplanes so soon as a low-powered two-seater is produced.



THE BRISTOL "JUPITER" IN FRANCE

A Further 150 Hours' Test for the French Government

WHEN, some months ago, the 400 h.p. "Bristol" Jupiter radial air-cooled engine completed an official endurance test of 150 hours' running at 90 per cent. full power (including a run of 50 hours non-stop), it was brought home to aircraft engineers that this type of engine had established a reputation for reliability which no other engine had surpassed. Since that time a series of notable performances, both on the bench and in the air, at home and abroad, have maintained the Jupiter engine in the forefront, and reports of a successful 150 hours' test on a Jupiter engine constructed under licence in France supply the latest proof.

This test was called for by the French War and Marine Departments, and from production engines awaiting test the Government Inspectors selected an engine at random. The engine was strictly a production series type, and no modification or replacement of parts was permitted.

Under the conditions laid down, the 150 hours' test had to be completed in four stages, with a strip and examination between each. A time limit of 18 hours was laid down for stripping, examination and rebuilding. The 18 hours started immediately the engine was touched to begin a strip, and the engine had to be rebuilt and sealed ready for test by the close of the eighteenth hour. The testing, stripping, examination and rebuilding were officially controlled throughout the test. The test was carried out at 90 per cent. full throttle, the power being absorbed by a propeller officially calibrated before the

test and between each stage. The fuel used was aviation petrol of 0.690 specific gravity, and the oil was Castrol "R." The test was run during warm weather, the lowest air temperature being 17° C.; no additional cooling was provided.

The 150 hours was done in non-stop runs of 10 and 20 hours, with one non-stop run of 40 hours. Between the stages two full throttle one-hour runs at normal revolutions per minute, and one full throttle ½-hour run at maximum revolutions per minute were made. The test was concluded by a power curve, the engine developing 400 b.h.p. at 1,600 r.p.m. and 435 b.h.p. at 1,750 r.p.m. The engine was finally stripped and a detailed examination made for condition and wear.

For information purposes a ball thrust of different proprietary make was used for each 50-hour period. Apart from this the only replacements made on the engine during the whole run were two outer valve springs, 10 rocker adjusting screws, and 16 piston rings which were damaged in the various strippings. During the whole run there was not a single involuntary stop, and the engine ran with remarkable regularity, maintenance of power and absence of vibration throughout the test. In no case was the allowed time of 18 hours for stripping, examination and rebuilding exceeded, the actual times being: 15½ hours, 15 hours and 12 hours.

The French Government officials have expressed themselves as being very satisfied with the whole of the tests and the final condition of the engine.



Record Paris-London Trip

A BLÉRIOT four-engined machine (Hispano-Suiza), belonging to the French Air Union, piloted by M. Bajac, and carrying 10 passengers and baggage, made the 245-mile journey from Paris to London in 1 hr. 47 mins., or at an average speed of 138 m.p.h. on September 25.

Sir Sefton Brancker in Berlin

AIR VICE-MARSHAL SIR SEFTON BRANCKER flew, in a D.H. biplane piloted by Alan Cobham, to Berlin on September 24 with the object of holding conversations with the German authorities in the hope of ensuring a continuation of the international air lines over Germany. The German demand

for the abolition of restrictions imposed upon the building, construction and possession of aircraft in the Treaty of Versailles is, in the meanwhile, being considered by the British and Allied Governments. Sir Sefton, it is believed, succeeded in his mission, and on Friday flew on to Prague, to fix matters in Czecho-Slovakia.

High Speed on a Curtiss Seaplane

On September 27 last Lieut. D. Rittenhouse, flying a Curtiss Navy seaplane at Port Washington, Long Island, attained a speed of 227½ m.p.h. during a flight lasting half an hour. This figure exceeds his own previous world's record, while it is stated that at one time during the flight he reached a speed of 242 m.p.h.

THE ROYAL AIR FORCE

London Gazette, September 16, 1924

Reserve of Air Force Officers

The following are granted commns. on probation in the General Duties Branch, in the ranks stated:—

Class A.—Flying Officer.—W. E. de B. Diamond. *Pilot Officers.*—C. P. Abbott, H. W. Petter, J. G. Webster (Sept. 16).

Class B.—Flying Officer.—G. R. Schooling. *Pilot Officer.*—A. E. Ansell (Sept. 16).

The following resign their commns.:—*Flying Officers.*—R. C. Armstrong, W. E. C. Coombs (Sept. 17).

The commns. on probation of the following Pilot Officers are terminated on cessation of duty, with effect from the dates indicated:—S. Plowman (Aug. 1); J. Ward (Aug. 13).

The following officers are confirmed in rank:—*Flying Officers.*—H. S. Basford, E. M. Cleland, H. Marsden, G. W. Thorpe. *Pilot Officers.*—J. C. Edwards, L. E. Falla, V. Foster, A. Y. Paton, F. H. Pidgeon, G. H. E. Roxburgh, G. W. Smart (Sept. 11).

Memorandum

96561 Cadet H. Graham is granted an hon. commn. as a Second Lieut. with effect from the date of his demobilisation.

London Gazette, September 23, 1924

General Duties Branch

The following Pilot Officers on probation are confirmed in rank:—G. D. Hamilton, I. B. Pigott; May 10. W. C. Adams, W. J. Brett, F. E. R.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Air Commodore H. C. T. Dowding, C.M.G., to H.Q., Iraq, for duty as Chief Staff Officer; 19.9.24.

Wing Commanders: A. H. W. E. Wynn, O.B.E., to H.Q., Iraq, for Air Staff duties; 18.9.24. N. J. Gill, C.B.E., M.C., to R.A.F. Depot, whilst attending course "B" at Imperial College of Science and Technology; 7.10.24. H. Blackburn, M.C., A.F.C., to Aeroplane and Armament Experimental Estab., Martlesham Heath, pending taking over command; 25.9.24. L. D. D. McKean, O.B.E., to No. 216 Sqn., Egypt, pending taking over command; 18.9.24.

Squadron Leaders: B. F. Moore to Station Commandant, Iraq; 18.9.24. R. M. Hill, M.C., A.F.C., to No. 45 Sqn., Iraq; 18.9.24. A. F. A. Hooper, O.B.E., to Aircraft Depot, Iraq; 18.9.24. D. E. Stodart, D.S.O., D.F.C., to No. 84 Sqn., Iraq; 18.9.24. W. A. McClaughry, D.S.O., M.C., D.F.C., to No. 8 Sqn., Iraq; 18.9.24. G. G. H. Cooke, D.S.O., A.F.C., to No. 4 Armoured Car Co., Iraq; 18.9.24. E. O. Grenfell, M.C., D.F.C., A.F.C., to R.A.F. Depot on transfer to Home Estab.; 1.9.24. V. Greenwood to H.Q., Egypt; 24.4.24. A. S. C. S. MacLaren, O.B.E., M.C., D.F.C., A.F.C., to R.A.F. Depot; 20.9.24. C. S. Wynne-Eyton, D.S.O., to No. 28 Sqn., India; 23.9.24.

Flight Lieutenants: C. E. H. James, M.C., D. F. Stevenson, D.S.O., M.C., D. K. Cameron, and D. H. de Burgh, A.F.C., all to H.Q., Iraq; 18.9.24. F. H. Coleman to No. 5 Armoured Car Co., Iraq; 18.9.24. T. Q. Studd, D.F.C., to No. 70 Sqn., Iraq; 18.9.24. W. S. Caster, M.C., to No. 30 Sqn., Iraq; 18.9.24. G. E. Godsave to No. 4 Armoured Car Co., Iraq; 18.9.24. J. F. A. Day, A.F.C., C. St. Noble, N. P. Dixon, A.F.C., and G. R. Ashton, to Air-

craft Depot, Iraq; 18.9.24. C. McM. Laing, M.C., A.F.C., to No. 45 Sqn., Iraq; 18.9.24. B. J. W. Brady, D.S.M., and W. L. Fenwick, to Armoured Car Wing H.Q., Iraq; 18.9.24. T. C. Luke, M.C., and W. B. E. Powell to Basrah Group H.Q., Iraq; 18.9.24. R. J. Divers, M.B.E., to No. 8 Sqn., Iraq; 18.9.24. T. L. Lowe to No. 84 Sqn., Iraq; 18.9.24. D. L. Blackford to No. 1 Sqn., Iraq; 18.9.24. C. Turner, A.F.C., to H.Q., Iraq; 15.8.24. H. B. Russell, A.F.C., to R.A.F. Cadet College, Cranwell, on transfer to Home Estab.; 1.9.24. J. F. Gordon, D.F.C., to H.Q., Inland Area; 15.9.24. H. O. Long, D.S.O., to No. 6 Sqn., Iraq; 23.9.24. C. A. Stevens, M.C., to No. 20 Sqn., India; 23.9.24. A. F. Quinlan to No. 5 Sqn., India; 23.9.24.

Flying Officers: J. Rodger, D.S.M., W. Gill, and J. H. Slater, M.B.E., to H.Q., Iraq; 18.9.24. A. P. White to No. 8 Sqn., Iraq; 18.9.24. J. R. Wolley and C. H. A. Stevens to Aircraft Depot, Iraq; 18.9.24. R. B. Harnden to Stores Depot, Iraq; 18.9.24. F. W. Barkley to No. 45 Sqn., Iraq; 18.9.24. J. B. Barrett to No. 6 Sqn., Iraq; 18.9.24. K. C. Garvie to No. 1 Sqn., Iraq; 18.9.24. G. C. Shepherd to No. 55 Sqn., Iraq; 18.9.24. E. Reid to No. 1 Sqn., Iraq; 18.9.24. C. P. Brown, D.F.C., to Air Ministry; 15.9.24. J. R. R. Harvey, M.M., to Inland Area Aircraft Depot, Henlow; 22.9.24. J. Parsons to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab.; 8.10.24. I. A. Bertram, G. I. C. Peacocke, and A. W. Rowbotham, to No. 5 Flying Training Sch., Sealand, in appointment to short service commissions; 15.9.24. J. Durward to No. 3 Wing H.Q., India; 1.9.24. C. R. Stewart to R.A.F. Depot, on transfer to Home Estab.; 8.9.24. R. F. Browne, D.F.C., to Reception Depot, West Drayton; 29.9.24. W. N. Plenderleith to R.A.F. Depot; 20.9.24. C. V. Lock to No. 19 Sqn., Duxford; 29.9.24. C. Rapley to Aircraft Park, India; 23.9.24. J. J. C. Cocks and G. N. Carroll to No. 60 Sqn., India; 23.9.24. (Hon. Flight-Lieut.) A. N. MacNeal to No. 28 Sqn., India; 23.9.24. E. T. O'N. Hogben to No. 20 Sqn., India; 23.9.24. H. E. E. Weblin to No. 84 Sqn., Iraq; 23.9.24.

Stores Branch

Flying Officer H. F. Webb is placed on half-pay, scale B, from Sept. 13 to 16, 1924, inclusive.

Reserve of Air Force Officers

The following officers are confirmed in rank, with effect from the dates indicated:—*Flying Officers.*—H. J. Andrews; March 11. D. C. Anderson, G. Bliss, M.M., R. H. McIntosh, F. V. Webb; Sept. 18. *Pilot Officers.*—E. Crewdson, J. J. Hickman, H. S. Howard, L. D. P. Joseph, A. G. Squire, J. H. C. Wake; Sept. 18.

The following Flying Officers are transferred from Class A to Class C, with effect from the dates indicated:—A. Duguid, A.F.C.; Sept. 13. G. N. Wilton; Sept. 23. The rank of Pilot Officer H. S. Basford is as now described, and not as in *Gazette* Sept. 16, 1924.

Personals

Married

Flight-Lieut. CECIL B. RIDDLE, R.A.F., youngest son of Mr. and the late Mrs. F. H. B. Riddle, was married on September 18, at St. Mary Magdalen, Wandsworth Common, to DORIS GWENDOLINE WICKHAM, youngest daughter of Mr. and Mrs. GEORGE WICKHAM, of Wandsworth Common.

To be Married

A marriage has been arranged and will take place in October between Air-Commodore C. R. SAMSON, C.M.G., D.S.O., A.F.C., R.A.F., and FREDa, eldest daughter of Mr. and Mrs. HERBERT K. REEVES, The Mansion, Leatherhead.

The engagement is announced between Mr. L. C. BEAUMONT, R.A.F., eldest son of the late Capt. D. J. Beaumont, Gloucester Regt., and Mrs. Beaumont, of Guernsey, C.I., and ENID CORINNE, younger daughter of Mr. and Mrs. HORACE H. RIPLEY, of Purléy, Surrey.

The engagement is announced between Flight-Lieut.

ROBERT ALEXANDER BIRKBECK, D.F.C., of the R.A.F., son of the late Maj. V. M. Birkbeck (Royal Scots), and Mrs. Birkbeck, of Stackhouse, Bournemouth, and MARY NEVILLE (Molly), only daughter of Mr. and Mrs. REGINALD MOXON, of Albert Hall Mansions, Kensington Gore.

The engagement is announced between Capt. HENRY WYNN DEACON, D.F.C., R.A., son of Mr. and Mrs. Allan Deacon, of 1, Campden House Chambers, W.8, and JESSIE MOIRA GREIG, only daughter of the late W. G. GREIG, and of Mrs. Greig, of 17, Campden Hill Court, W.8.

The marriage arranged between Flying Officer HORATIO SLEIGH, 216 Sqn. R.A.F., Heliopolis, Cairo, Egypt, son of the late Mr. Thomas Harper Sleigh, and Mrs. Sleigh, of Bury, Lancashire, and Mrs. DOROTHY OGLE, widow of Dr. J. G. Ogle, of Mount Cottage, Redhill, and daughter of Mrs. William Hunter, of Polmood, Cranbrook, Kent, will take place at 1 p.m. on Wednesday, October 22, at All Souls', Langham Place.

Fatal Parachute Accident in France

DURING a fête at Auch on September 28, Mlle. Lillian Darcy attempted to drop by parachute from a monoplane piloted by Froneval. The parachute failed to open in time, and she was killed in the presence of 10,000 people.

Lord Ypres' Tribute to R.N.A.S.

ON the occasion of his 72nd birthday on September 28, Lord Ypres gave an address at the anniversary service held at the R.N.A.S. Memorial on Hawkes Hill, Walmer.

London-Paris 'Plane Thrill

WHILE on its way from Croydon to Paris on September 29 one of the twin-engined Farman Goliaths provided a regular "film thrill." The throttle control of one of the engines broke, and a mechanic climbed out on to the wing and attempted to effect a repair. This he was unable to do, so he remained for nearly 45 mins. lying on the wing holding open the throttle until the machine landed at Lypne. His plucky act was watched with anxiety by the eight passengers on board.

INSTITUTE OF AERONAUTICAL ENGINEERS



Fixtures, 1924-25

1924

October 17, 6.30 p.m.—Paper, "Commercial Airship Design," by Commander F. L. M. Boothby, C.B.E. Engineers' Club, Coventry Street, W.1.

November 7, 6.30 p.m.—Paper, "Steel versus Lighter Alloys," by Colonel N. T. Belaiew, C.B., M.I.M.E., M.Inst. Met., M.I.Met., Member, Engineers' Club.

November 21, 6.30 p.m.—Paper, "Graphical Methods of Aircraft Structural Design," by Dr. A. P. Thurston, M.B.E., F.R.Ae.S., M.I.A.E., Honours Member, Engineers' Club.

December 12, 6.30 p.m.—Paper, "Notes on Seaplane Design," by Commander J. C. Hunsaker (C.C.), U.S.N., Assistant Naval Attaché to the American Embassy, London. Kingsway Lecture Hall, Kingsway Hall, W.C.2.

1925

January 9, 6.30 p.m.—Paper, "The History and Evolution of the Avro Training Machine," by Mr. R. J. Parrott, Honours Member, Engineers' Club.

January 23, 6.30 p.m.—Paper, "A Few Experiments with Shock-Absorbing Hulls for Flying Boats," by Lieut. N. A. Olechnovitch, Member, Engineers' Club.

February 6, 6.30 p.m.—Paper, "Photo-Elastic Methods of Measuring Stress," by Prof. E. G. Coker, D.Sc., F.R.S. Engineers' Club.

February 20, 6.30 p.m.—Paper, "Flying in Australia," by Mr. H. L. J. Hinkler, Engineers' Club.

March 6, 6.30 p.m.—Second Annual Lecture by Continental Designer: "The Advantages of Metal Construction," by M. E. Dewoitine. Kingsway Lecture Hall, Kingsway Hall, W.C.2.

Arrangements for the Annual Meeting will be announced later.

April 8.—Visit. (Details will be announced later.)

April 24, 6.30 p.m.—Paper, "The Position of the Airship in Aerial Transport," by Commander C. D. Burney, C.M.G., M.P., R.N. Engineers' Club.

May 8, 6.30 p.m.—Paper, "A Résumé of Achievements in Aviation during the Past Year," by Captain W. H. Sayers, Honours Member, Engineers' Club.

May 20.—Visit to the National Physical Laboratory, Teddington.

June 6.—Visit to the Croydon Aerodrome.

A 32-Hour Flight by "Z.R.3."

A FURTHER flight has been made by the "Z.R.3"—the rigid airship built by the Zeppelin Co. for the U.S. Government. On September 25, in spite of bad weather conditions, the airship with 75 passengers on board, left Friedrichshafen at 9 a.m. for an extended tour over Germany. After a short cruise over Lake Constance the airship headed N.W. and flew over Heidelberg, Darmstadt, Frankfurt and Hanover. As soon as the "Z.R.3" was sighted at all the towns it passed over, the inhabitants turned out in large numbers and gave the airship an extraordinarily enthusiastic greeting. Between Marburg and Cassel, aided by a strong wind, a speed of 112 m.p.h. was attained. On reaching Hanover, shortly after 3 p.m., the "Z.R.3" circled over the town, and dropped a message of greeting for Field-Marshal Hindenburg as it passed over his house. Then, flying on to Hamburg the airship crossed over to Copenhagen and reached the Swedish coast shortly after midnight. Passing over Malmö the "Z.R.3" proceeded via Helsingborg a short distance inland, and then returning over much the same route crossed the Baltic to Stettin, Germany. At about 9.30 a.m. (September 26) it arrived over Berlin, when practically the whole population assembled in the streets and on the roofs to welcome it. After cruising round Berlin for some time, the "Z.R.3" returned to Friedrichshafen via Dresden, Hof, Nuremberg, Augsburg, Ulm and Stuttgart. Friedrichshafen was safely reached at 5 p.m. after a flight lasting 32 hours, during which it covered a distance equal to nearly half that of the proposed flight to America. Final instructions have now been received from the U.S. Government as regards the trip of the "Z.R.3" to America.

The U.S. light cruisers *Detroit* and *Milwaukee* and the Fleet auxiliary (oiler) *Patoka* are to be stationed at different points along the route. The *Patoka* will be stationed 300 miles south of Cape Farewell, the *Detroit*—which will be fitted with a special mooring mast—600 miles south of this, and the *Milwaukee* 250 miles east of Halifax. The "Z.R.3"

will take a northern course via Greenland, and all arrangements are completed at Lakehurst aerodrome to receive the airship. It is possible that the "Z.R.3" will pass over London on its way across the Atlantic.

"R.33" being Refitted

THE British rigid airship "R.33" is being refitted at Cardington station in order that it may be used for carrying out a preliminary experimental programme in connection with the Imperial airship scheme. On September 26 last the crew of the "R.33" met at Bedford at a reunion dinner, under the chairmanship of Maj. G. H. Scott, who piloted the "R.34" out and back across the Atlantic. Lieut. Irwin, commander of the "R.33," said they were proud of being the first crew to commission the ship under the new scheme, and he was confident that the experiments would prove successful.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1923

Published September 18, 1924

- 5,365. RAUL, MARQUIS OF PATERAS PESCARA. Ignition systems for i.c. engines. (193,862.)
 - 6,947. E. COUPLAND and F. J. TREVITT. Spars or struts and longerons for use in aeroplane construction and in propeller blades. (220,773.)
 - 13,830. S. A. REED. Air propellers. (199,708.)
 - 13,888. SPERRY GYROSCOPE CO. Gyroscopic apparatus. (220,726.)
 - 18,729. DR. H. LOWY. Means for determining the height of aircraft from the ground. (220,779.)
 - 23,544. SOC. ANON. DES ATELIERS D'AVIATION. L. BREGUET. Lubricating means for big-ends of connecting rods. (207,160.)
- Published September 25, 1924
- 13,851. H. F. PARKER. Method for the recovery of water from exhaust gases of airship motors, and apparatus therefor. (220,986.)
 - 14,454. J. G. GRAY. Gyroscopic apparatus. (221,006.)
 - 14,536. LORD INVERNAIN (W. BEARDMORE) and A. E. L. CHORLTON. Two-stroke i.c. engines. (221,010.)
 - 14,537. LORD INVERNAIN (W. BEARDMORE) and A. E. L. CHORLTON. Two-stroke i.c. engines. (221,011.)
 - 18,167. A. LAMBLIN. Radiators. (203,307.)
 - 19,123. BLERIOT AERONAUTIQUE SOC. ANON. Aeroplanes. (203,662.)
 - 20,115. A. T. VANCE and F. J. ABBOTT. Automatic stabiliser. (221,069.)
 - 23,144. FAIRY AVIATION CO., LTD., and C. R. FAIRY. Fuselages. (221,088.)
 - 25,439. A. J. ROWLEDGE and ROLLS-ROYCE, LTD. Crankshaft bearing casings. (221,104.)

Published October 2, 1924

- 14,866. A. ROHRBACH. Steering-devices for flying machines with several propellers. (221,275.)
- 21,670. G. PAGONIS. Rotary engines. (221,340.)
- 23,182. H. BOLAS and G. G. PARNALL. Control of aircraft. (221,352.)

PUBLICATIONS RECEIVED

Aeronautical Research Committee, Reports and Memoranda: No. 900. (Ae. 130). Report of the Design Panel on the Scale Effect on Lift, Drag, and Centre of Pressure of Complete Aeroplanes. March, 1924. Price 2s. 6d. net. No. 906. (Ae. 24.) The Measurement of Viscosity by Means of Capillary Tubes. By G. Barr. March, 1923. Price 1s. net. London: H.M. Stationery Office, Kingsway, W.C.

Scientific Papers of the Bureau of Standards, No. 489. Primary Radio-Frequency Standardisation by use of the Cathode-Ray Oscillograph. By G. Hazen and F. Kenyon. May 22, 1924. U.S. Government Printing Office, Washington, D.C., U.S.A. Price 10 cents.

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